

Chapter 3 Affected Environment, Environmental Consequences, and Mitigation

This chapter describes the current state of the resources in the project area and identifies the likely impacts of implementing the proposed project. In general, each subsection below will describe the present conditions, discuss the likely impacts of building the proposed project, and indicate what measures would be taken to mitigate those impacts.

3.1 Geology and Soils

3.1.1 Affected Environment

The majority of the study area is flat (1-3 percent slope), with numerous watercourses and rolling terrain. The highest point in the project area is the small table mountain/rock outcropping that occurs in the northeast quadrant of the SR 99/149 intersection. Elevations within the project area generally range from 120-250 feet. Gently rolling hills are punctuated by both narrow and broad swales that are erosional features of what were once Pliocene and Eocene pyroclastic flows. Soils that developed on these old flows are classified in the Tuscan-Anita and Red Bluff-Igo complexes and are underlain by a continuous indurated hardpan. These substances are responsible for the mima-mound topography that forms a network of meandering integrated drainages, and vernal pool and swale habitats (*Caltrans 2000*).

Watercourses and very broad riparian zones are underlain with Great Valley recent river and stream deposits of silt and alluvium. Streams within the project area include Clear Creek, Dry Creek, Little Dry Creek, Gold Run Creek, and Cottonwood Creek. Older sediments make up non-marine deposits that were established during the Pliocene and Pleistocene eras.

There are four major types of soils found in the project area. Primary residual soils originate from subterranean parent rock that has been altered by erosion, weathering and migration. These soils are often found within close proximity to exposed rock outcroppings. Due to the inadequate nutrient supply and shallow soil depth, vegetation coverage is mostly limited to grasslands and used for grazing. This soil type can be found near the SR 70/149 and 99/149 intersections, and at small, scattered

areas along SR 149. Old Valley alluvial soils originate from volcanic parent rock that has been transported and deposited by historic drainage corridors then weathered and modified. These semi-shallow soils have low agricultural and nutrient value and are mainly used for grazing. This soil type is found along SR 149 between drainage areas and along SR 70 north of SR 149. Un-weathered alluvial soils have recently been deposited along existing drainage corridors and floodplains. These soils have not experienced much weathering or modification since deposition and are often rich in nutrients. In a natural environment, these soils are usually identified with riparian or wetland vegetation, and are present along the Gold Run Creek, Dry Creek and Clear Creek drainages, as well as near the SR 70/191 intersection. Intensive agricultural activities are common in this environment. Within the project area, there are two orchards, both of which are located on this soil type. Riverwash – Tailings ‘soils’ are found along existing drainage corridors that have a history of mining and gravel extraction. Grain sizes are normally larger than 1 cm diameter and pioneer plant species such as Cottonwood and Willow are common along these disturbed stream banks. This ‘soil’ type is present in one small area on the east side of the Dry Creek drainage, and near the SR 70/191 intersection.

3.1.2 Impacts

Impacts to soils and geology would occur from construction activities such as grading, leveling, and construction of new roadway in the project area. Impacts would be similar for all build alternatives.

3.1.3 Mitigation

No mitigation is required. Construction measures such as Best Management Practices for soil erosion and water quality, as well as revegetation when construction is finished would minimize impacts to soils within the project area.

3.2 Water Quality and Hydrology

3.2.1 Affected Environment

The proposed project is located in the Central Valley Region (Region V) of the California Regional Water Quality Control Board (RWQCB). It occurs within the Central Valley Basin Plan which lists many beneficial uses for streams and springs in the vicinity of the project including municipal, agricultural, industrial, recreation, warm and cold freshwater habitat, migration, spawning and wildlife habitat and

navigation. The Porter-Cologne Water Quality Control Act of 1969 requires that each RWQCB within the state formulate and adopt water quality control plans or basin plans for all areas in the region. The Clean Water Act as amended in 1972 imposes similar requirements.

The average annual precipitation near the city of Oroville is 32 in, and the region is defined by hydrologic basins that contribute to the Sacramento and San Joaquin River watersheds. The Sacramento and Feather Rivers are the major waterways in the vicinity of the project. Flows generally come from numerous foothill drainages to the Cherokee and Western Canal systems, and eventually flow to the Sacramento River. The Feather River flows westward toward Oroville and then south, crossing SR 70. It is only within the study area near SR 162, near the junction with SR 70.

Surface waters within the project limits include Little Dry, Clear, Dry, Gold Run, Cottonwood and Campbell Creeks, and several of their tributaries. Within the project area, all of these streams are perennial (wet through the entire year); however, some of their tributaries are ephemeral (lasting a short time). All of these waters with the exception of Little Dry Creek flow into the Cherokee Canal approximately 5 mi downstream from the project site. The Cherokee Canal flows into the Butte Sink where it empties into Butte Creek and ultimately into the Sacramento River (both to the west, outside the project area). Little Dry Creek drains southward directly into Butte Creek. Little Dry, Clear and Dry Creek are located within the 100-year floodplain (Zone A) as determined from Flood Insurance Rate Maps (FIRM). The remaining creeks in the project area are outside the 500-year floodplain (Zone X).

Stream watersheds that are present in the project area function as recharge areas for the East Butte aquifer system. There are no sole-source aquifers and no evident public water sources in the project area. There are, however, several residential (individual) wells located in the project vicinity.

The existing storm water runoff from SR 70/149/99 and bridges contributes to the pollutant load of runoff waters entering the creeks and ditches and eventually the Feather River. The actual pollutant loading from the existing State roadway system to the surface waters has not been determined, since site specific data is required to perform such calculations. Storm water runoff from SR/70/149/99 within the study area is only a small fraction of the total quantity of surface runoff draining into the local creeks and ditches and into the Feather River.

The National Pollution Discharge Elimination System (NPDES) program, which is implemented by the State Water Resources Control Board (SWRCB), was established by the USEPA to regulate storm water runoff. The SWRCB issued an NPDES Statewide Storm Water Permit to Caltrans in 1999 (Order No. 99-06-DWQ) (CAS000003) to regulate storm water discharges from Caltrans facilities and to implement a year-round program in all parts of the State to control storm and non-storm water discharges. This Permit allows Regional Water Quality Control Boards to specify additional requirements they may consider necessary to meet water quality standards. In addition, the Statewide Permit requires Caltrans to meet the requirements of the Construction General Permit (Order No. 99-08-DWQ) (CAS000002) that applies to all storm water discharges from land where clearing, grading, and excavation result in soil disturbances of at least 2 hectares (5 acres).

3.2.2 Impacts

The proposed project would require excavation, grading, roadway construction and loss of vegetation, all of which have the potential to result in erosion and adverse impacts to water quality. Work within tributary drainages has the potential to impact water quality in Little Dry, Clear, Dry, Gold Run and Cottonwood Creeks, as well as temporarily alter drainage patterns and cause increases in the rate or amount of surface run-off, erosion or siltation. Construction of new bridge piers would require water diversion measures if water were present at the time of work. Metals, oils, greases and other contaminants from construction could potentially run off-site into surface waters. Due to the increased impermeable surface that would result from a widened roadway, there would be an increase in the amount of water at peak flows. However, the contribution of storm water runoff from the project's impervious area to the entire hydrologic sub-area would be extremely small and would not have a substantial impact. It is assumed that construction practices, and therefore construction-related impacts for any of the build alternatives, would be generally equivalent.

3.2.3 Mitigation

To avoid substantial impacts due to erosion, sedimentation, and introduced pollutants, both temporary (during construction) and permanent erosion control measures would be implemented. These measures would include (but are not necessarily limited to) the following:

- Adverse impacts due to “in-water” construction activities would be avoided, minimized, or rectified by a combination of Caltrans standard specifications and procedures for construction and by additional conditions supplied by permitting and regulatory agencies.

The Caltrans Statewide Storm Water Management Plan (The Clean Water Act (33 USC 1251-1376), as amended by the Water Quality Act of 1987, requires an applicant for any federal permit that proposes an activity which may result in a discharge to waters of the United States to obtain a Section 401 Water Quality Certificate which states that the discharge will comply with other provisions of the Act (ie. will restore and maintain the chemical, physical, and biological integrity of the water). All “in-water” work would comply with conditions of the Section 401 Water Quality Certificate issued for the project by the Central Valley Regional Water Quality Control Board.

- SWMP) requires the assessment and incorporation of appropriate pollution prevention BMPs in every project. An appropriate combination of approved BMPs would be incorporated for the proposed project.
- Construction site Best Management Practices (BMPs) are applied during construction activities to reduce the pollutants in storm water discharge throughout construction. Caltrans would require from its contractors a Storm Water Pollution Prevention Plan (SWPPP) containing effective erosion and sediment control measures. These measures must address soil stabilization practices, sediment control practices, tracking control practices, and wind erosion control practices. In addition to measures such as sediment retention basins, materials handling and storage, spill prevention, and erosion blankets, specific pollution control measures would be included in the project design specifications to limit and minimize erosion, sedimentation and release of chemicals to the water bodies to prevent degradation of water quality during construction. The project plan must also include non-storm water controls, waste management and material pollution controls. It is generally accepted that practices that perform well by themselves can be complemented by other practices to raise the collective level of erosion control effectiveness and sediment retention.
- Disturbed slopes would receive temporary erosion control measures at the end of each work season (prior to November 15). Permanent erosion control measures would consist of seeding and mulching of all disturbed soil areas that would not

be covered by paving. Contract specifications would require the use of California shrub, forb and grass species collected from the project vicinity. A Caltrans Landscape Architect and a District Biologist would develop a revegetation plan. Mulches would be from source materials that would not introduce exotic species.

- Rock slope protection (RSP) would be placed around the abutments of all bridge structures and at the outlets of most culverts. Additional scour protection was placed around piers of the Clear Creek Bridge under a separate project, completed in 2002. New bridge abutments and extended culverts would be placed in-line with existing facilities and would not result in alterations in the flow pattern.

The State Water Resources Control Board (SWRCB) has issued the Caltrans Statewide NPDES Storm Water Permit (Order No. 99-06-DWQ) (CAS000003), adopted July 15, 1999, which covers all Caltrans facilities in the State. In compliance with this permit, the Statewide Storm Water Management Plan (SWMP) was developed by Caltrans to address storm water pollution related to highway planning, design, construction and maintenance activities throughout the State. The SWMP describes the minimum procedures and practices that Caltrans uses to reduce the discharge of pollutants in discharges from storm drainage systems owned or operated by Caltrans. It outlines procedures and responsibilities for protecting water quality at Caltrans facilities, including the selection and implementation of Best Management Practices (BMPs). The proposed project would follow the guidelines and procedures outlined in the SWMP.

3.3 Hazardous Waste Sites

3.3.1 Affected Environment

The foundation of a former gasoline service station dating back to the early 1940s is present within State right-of-way near the junction of SR 70 and SR 149, between SR 70 and Table Mountain Blvd (Figure 3-1). In consultation with the Central Valley Regional Water Quality Control Board (CVRWQCB) and the Butte County Environmental Health Department (BCEHD), Caltrans hired a consultant to remove three fuel underground storage tanks (USTs) from the site in August 2000. Soil sampling performed from February 2001 to August 2002 down-gradient from the former tank locations indicated a small amount of contamination from gasoline, diesel and associated compounds in the soil. Groundwater monitoring at the site and at a

Figure 3-1. Former Gasoline Station Location

domestic well across Table Mountain Blvd. has shown no substantial groundwater contamination (*Geocon 2002*).

Existing bridges along SR 149 at Gold Run, Clear, Dry and Little Dry Creeks were constructed during a period when asbestos and lead-based paint were commonly used in bridge construction. The proposed project would not widen or otherwise alter these bridges; therefore, there would be no risk for exposure to asbestos or lead from these structures.

Construction of the proposed project could result in the demolition of existing houses and/or businesses. These structures could contain asbestos containing materials (ACMs) and/or lead-based paint. Prior to demolition, structures would be inspected to determine the presence/absence of these substances.

Dry Creek runs under SR 149, which is downstream from the former Cherokee Gold Mine. Mercury was used at the mine as part of the mining process. In April 2002 a private consultant completed a site investigation for the presence of mercury within the area. Results from this investigation show that mercury is not present in the Dry Creek drainage in the project area (*PSI 2002*).

3.3.2 Impacts

Depending on final project design, existing houses and/or other buildings could be disturbed or demolished for construction of the proposed project. These structures could contain ACMs and/or lead-based paint. Asbestos can pose a health risk if the fibers become airborne during removal and are inhaled. Dust and paint chips from lead-based paint can pose a health risk if they are inhaled or swallowed.

If final project design determines that any structures would be disturbed or demolished for construction of the project, an Asbestos Hazard Emergency Response Act (AHERA) trained inspector would be hired to determine the presence/absence of ACMs, and a Certified Lead Inspector/Assessor would determine the presence/absence of lead-based paint. Testing would occur soon after the structures are identified.

If final project design determines that the project would disturb the former UST area, special provisions in the construction contract would outline the procedures for testing, removal and disposal of any contaminated soil.

3.3.3 Mitigation

Prior to project construction, structures that would be disturbed or demolished would be evaluated by AHERA-certified inspectors for the presence of ACMs and lead-based paint. If any structures were found to contain these substances, registered asbestos and/or lead abatement contractors would handle debris removal and disposal according to requirements set forth by the California Occupational Safety and Health Administration (Cal-OSHA) and the Butte County Air Quality Management District. The costs for ACM and lead-based paint removal are variable depending upon what is removed (floor tile, shingles, etc.)

If final design identifies that project construction would disturb the former UST area, the soil in the area of disturbance would be tested prior to construction, removed and disposed of by a registered contractor. The cost for removal and disposal of contaminated soil is approximately \$50 -\$100/ton.

3.4 Air Quality

3.4.1 Affected Environment

The proposed project is located in the Sacramento Valley Air Basin and comes under the jurisdiction of the Butte County Air Pollution Control District. As of November 19, 2000 the USEPA designated the status of Butte County for meeting National Ambient Air Quality Standards (NAAQS) regulated under the Federal Clean Air Act as: Unclassified or Attainment for nitrogen dioxide and sulfur dioxide, Non-attainment for ozone, and Attainment for suspended particulate matter (PM 10) and carbon monoxide (Chico urban area is attainment-maintenance for CO). As of November 19, 1999, the California Air Resource Board listed the California designated status of Butte County for meeting the California Ambient Air Quality Standards (CAAQS) as: Attainment for carbon monoxide and sulfates, Non-attainment for ozone, Non-attainment for suspended particulate matter (PM 10), Unclassified/Attainment for nitrogen dioxide, sulfur dioxide, lead and visibility reducing particles, and Unclassified for hydrogen sulfide.

Suspended Particulate Matter (PM 10)

Transportation facilities may generate localized high concentrations of air pollutants ("hot spots"). For the purpose of Transportation Conformity, a project is subject to Hot Spot analysis for impacts that may occur in the immediate vicinity of the transportation facility, as a direct result of facility operation, only if it is located in a

Federal PM 10 non-attainment or maintenance area. Since the proposed project is in an area of attainment for the Federal PM 10 standard, further analysis is not required. The USEPA has proposed new eight-hour PM 2.5 standards, but they have been held up in recent court actions. Attainment/non-attainment areas have not been designated for the new standards.

Butte County is non-attainment for the Federal and State Ozone standards. Ozone is a secondary pollutant, which means it is formed in the atmosphere when nitrogen oxides (Volatile Organic Compounds) are emitted from mobile or stationary sources and mix with sunlight. The regional analysis is in the Regional Transportation Plan (RTP) and the Transportation Improvement Program (TIP). When a transportation project is included in a conforming RTP or TIP, as is the proposed project, then the additional emissions from the project are accounted for and should not create an air quality impact for the region. No further analysis is required.

Structural Asbestos

Within the project limits, several structures are present that could contain asbestos. Depending on final design, some of these structures could be disturbed or demolished for construction of the proposed project.

Naturally Occurring Asbestos

Within the State of California, naturally occurring asbestos is known to exist in serpentine rock that is commonly found in the coast range, Klamath Mountains, and Sierra foothills. Within Butte County, serpentine rock is found in various areas in the foothills. The proposed project is located in the Sacramento Valley, in an area that does not contain any naturally occurring asbestos.

3.4.2 Impacts

Carbon Monoxide

Impacts to carbon monoxide levels were assessed using a micro-scale screening analysis outlined in the “Transportation Project-level Carbon Monoxide Protocol” by the Institute of Transportation Studies, University of California, Davis 1997.

Receptors (houses, businesses) within the project limits would experience CO concentrations well below the 20 parts per million (ppm) California or the 35 ppm Federal one-hour standard, and also below the 9 ppm State and 9 ppm Federal 8-hour standard:

Table 3-1. Expected Max. 1-Hr & 8-Hr Carbon Monoxide (CO) Concentration (ppm)

Distance from Traveled Way (m)	No-Build, 2025 Max. CO (ppm)		Build, 2025 Max. CO (ppm)	
	1hr	8hr	1hr	8hr
15	7.5	5.2	5.6	3.9
30	6.0	4.2	4.7	3.3
60	4.9	3.4	4.1	2.9

Source: Air Quality Report, Caltrans, 2000

The table shows that a Build Alternative would result in lower CO emissions than a No Build Alternative. Slow moving, stop and go traffic releases more CO emissions than free-flowing, faster moving traffic. The proposed project would result in improved traffic flow and lower CO emissions.

The project is in an air quality non-attainment area, which has transportation control measures in the currently applicable State Implementation Plan (SIP). The project is in the most recent conforming BCAG / Federal Transportation Improvement Plan (FTIP) dated September 2000, the Metropolitan Transportation Plan (MTP), and BCAG's 2001 RTP. The design and scope of the project have not changed from what was included in the MTP and FTIP; consequently, no project-level interagency consultation has been necessary. No CO violations were identified within the area affected by this project, and analysis demonstrates that this project would not cause any new violations. Therefore, this project is found to be in conformity with the SIP.

Construction activities can cause temporary impacts to local air quality. Emissions would result from earthmoving and use of heavy equipment during excavation, cut and fill operations and roadway construction. These emissions vary depending on work being done and weather conditions.

Structural Asbestos

After final project design, any houses and/or businesses that would be disturbed or demolished to facilitate project construction would be inspected to determine the presence/absence of asbestos.

3.4.3 Mitigation

Temporary impacts during construction would be minimized by requiring the contractor to utilize Standard Best Management Practices (BMPs) in accordance with Section 7-1.01F (Air Pollution Control) and Section 10.1 (Dust Control) of the current Caltrans' Standard Specifications, which also require compliance with Butte County Air Quality District's Fugitive Dust Emission Rule 207.

Structural Asbestos

If any structures that would be disturbed during construction were found to contain asbestos, the required notification would be made to the Butte County Air Quality Management District, and a certified contractor would handle debris removal and disposal.

3.5 Noise

3.5.1 Affected Environment

Noise levels in the project vicinity are dominated by traffic on SRs 70, 149 and 99. Existing land use consists primarily of undeveloped land, agricultural land, one business and a few homes.

To describe existing and projected noise levels due to traffic, Caltrans uses Sound-32, a traffic noise prediction model. The Sound-32 model was developed to predict hourly L_{eq} (see glossary) values for traffic conditions, and the model is considered accurate within 1.5 decibels (dBA). This model is the Caltrans version of the two federal (traffic noise) programs STAMINA 2.0 and OPTIMA.

A baseline for the existing noise environment in the project area was established by conducting short-term noise monitoring near the SR 70/149 intersection. Sound level measurements were conducted on May 30, 2000 using a Bruel & Kjaer type 2238 Mediator sound level meter, located 1.5 m above the ground. The sound level meter was calibrated using a Bruel & Kjaer type 4231 calibrator before and after use to comply with the American National Standards Institute (ANSI) standard S1.4-1971 for Type 1 (precision) sound level meters.

Sound level measurements were taken at five residential receptor (house) locations (Figure 3-2, receptors 1-4, 6): three at the SR 70/149 intersection, one on the west side of SR 70 near SR 191, and one on the south side of SR 149 east of Shippee

Road. Measurements were also taken at one commercial (business) location at the intersection of SR 149 and Openshaw Road (Figure 3-2, receptor 5).

3.5.2 Impacts

Based on roadway geometrics of the proposed project and the future traffic volumes provided by Caltrans Office of System Planning and Travel Forecasts, future traffic noise levels were calculated for the build and no-build alternatives. Table 3-2 shows existing and predicted noise levels:

Table 3-2. Traffic Noise Levels

Receptor I.D. #	Existing Noise Level	No Build 2025 Leq(h) dBA	Build 2025		NAC ¹ Category	Approaches or Exceeds NAC ²
			Leq(h) dBA	Increase		
1	63	67	69	6	Residential	yes
2	60	67	69	9	Residential	yes
3	62	70	68	6	Residential	yes
4	60	60	62	2	Residential	no
5	63	69	70	7	Commercial	no
6	56	57	59	3	Residential	no

- 1 NAC is the Noise Abatement Criteria (NAC) as defined in Title 23 Code of Federal Regulations (CFR) Part 772
- 2 The NAC is based on Title 23 CFR 772: Abatement to be considered when predicted noise levels approach or exceed the NAC. The NAC for residential is Leq(h) 67 dBA, and an "approach" impact would occur when noise levels are within 1 dBA of this level, i.e., 66 dBA. The NAC for commercial it is Leq(h) 72 dBA.

With the build alternative, the three residences at the SR 70/149 intersection (receptor #s 1-3) could experience increased sound levels approaching or exceeding the residential Noise Abatement Criteria of 67dBA at which level abatement must be

Figure 3-2. Noise Receptors

considered. However, the No Build alternative would also meet or exceed the NAC level at these three residences. Noise levels at the other receptor locations would not approach or exceed the NAC. There would be no substantial noise impacts with either the build or no build alternatives.

Construction of a 3 m (10 ft) soundwall at the SR 70/149 intersection (indicated as SW-1 on Figure 3-2) would abate noise levels at least 5 dBA, meaning the abatement is feasible. Based on reasonableness criteria it was calculated that a total of \$35,000 could be spent per benefited residence for the soundwall (*Caltrans 1998*). Three residences would benefit from this wall, which means that the total soundwall cost could not exceed \$105,000. Based on the project engineer's estimate, the actual cost of this soundwall would be \$620,000, which substantially exceeds the allowable cost of \$105,000 calculated according to the reasonableness criteria. Consequently, a soundwall is not recommended for these receptors, as it would not be a reasonable expense.

Interior noise insulation and/or double-glazed windows may be provided when severe traffic noise impacts are anticipated and normal abatement measures are physically not feasible or are economically unreasonable. When considering these extraordinary abatement measures, it must be demonstrated that the affected activities experience traffic noise impacts to a far greater degree than other similar activities adjacent to highway facilities, i.e., private residential dwelling units having after-project exterior noise levels of 75 dBA, $L_{eq}(h)$, or more, or the project causes a noise level increase of 30 dBA or more over predicted noise levels if no project was constructed (*Caltrans 1998*). The proposed project would not result in severe noise impacts.

Table 3-2 shows that the No Build Alternative is predicted to meet the NAC level (67 dBA) in the year 2025 at receptors 1 and 2, and exceed it at receptor 3. Table 3-2 also shows that the projected noise levels at the three residences for the Build Alternatives would only be 2 dBA higher than the levels for the No Build Alternative. A difference of 2 dBA is generally not perceptible to humans (*Caltrans 1998*) and is not considered a substantial increase. The proposed project would not result in substantial noise impacts.

3.5.3 Abatement/Mitigation

Abatement measures are not proposed as they fail to meet the reasonableness criteria. The proposed project would not result in substantial noise impacts, therefore no mitigation is proposed.

3.6 Wetlands and Waters of the U.S.

Wetlands are defined as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.” The term “other waters of the U.S.” includes seasonal or perennial waters (creeks, lakes or ponds) and other types of habitats that lack one or more of three technical criteria for wetlands (soil, hydrology, vegetation). The USACOE has authority under Section 404 of the Clean Water Act to regulate activities that could discharge fill or dredge material into, or otherwise adversely modify these resources. Permits issued by USACOE require mitigation to offset impacts to ensure “no net loss” of wetland acres or value. An Individual Section 404 Permit is required for projects that would result in substantial impacts to wetlands, and a detailed alternatives analysis that presents anticipated impacts to aquatic resources and proposed and listed special status species must be prepared in compliance with the Section 404(b)(1) Guidelines (Appendix E).

For the proposed project, wetlands were classified into six principal types based on vegetation composition and hydrologic regime: vernal pools, vernal swales, freshwater marsh, mixed riparian, wetland roadway drainages, and other wetlands. All wetlands within the study area were delineated according to the USACOE Wetland Delineation Manual (*ACOE 1987*).

3.6.1 Affected Environment

Jurisdictional Wetlands

Jurisdictional wetlands meet the hydrology, soil and vegetation criteria of the USACOE Federal Wetland Delineation Method (*USACOE 1987*). All resources meeting the criteria were mapped within 250 ft of the proposed cut/fill lines using aerial interpretation and Global Positioning Satellite (GPS) technology. Delineations were performed in 1992 by a consultant, and in 1997, 1999 and 2001 by Caltrans.

Vernal Pools and Swales - Vernal pool and swale complexes are widespread, with the highest quality habitat and highest density occurring in the vicinity of Gold Run Creek and along the north side of SR 149 between Clear Creek and the SR 99/149 intersection (Figure 2-4 through Figure 2-6). These pools are of the “mudflow type,” occur as shallow depressions underlain by hardpan or claypan soils on plains punctuated by undulating “mima” mounds that rise 0.9 – 1.5 m (3-5 ft) above the pool bottom, and are associated with a series of interconnecting swales. These depressions

fill with water during a brief (2-4 month) period in the winter, and support a group of endemic plants found in no other region or habitat. The characteristic species include: annual hairgrass (*Deschampsia danthonioides*), goldfields (*Lasthenia platycarpa*), toad rush (*Juncus bufonius*), white-headed navarretia (*Navarretia leucocephala*), stalked popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), and coyote thistle (*Eryngium vaseyi* var. *vallicola*).

Vernal pools are a unique and important resource due their limited distribution, endemic flora and fauna and habitat for many of California's special status species. Because of these values, the USFWS has determined that these wetlands should be placed in Resource Category 2, which designates habitat that is of high quality for evaluation species and is relatively scarce or becoming scarce on a national basis or in the eco-region. The mitigation goal for habitat in Category 2 is "no net loss of in-kind habitat value."

Freshwater marsh – This habitat occurs throughout the project area in association with seeps and vernal pool and swale habitat, along slow-moving creeks and in artificial settings such as stock ponds and roadway drainage ditches. These marshes are vegetated wetlands dominated by non-woody herbaceous plants, and stay wet longer into spring and tend to be deeper than vernal pools. They are dominated by Baltic rush (*Juncus balticus*), creeping spikerush (*Eleocharis macrostachya*), tall flatsedge (*Cyperus eragrostis*), sedge (*Carex nebraskensis*), lady's thumb (*Polygonum persicaria*), dallisgrass (*Paspalum dilatum*) and rabbit's foot-grass (*Polypogon monspeliensis*). They provide functional value for flood control and storm damage prevention, sediment trapping, pollution abatement and potential groundwater recharge. They are also a valuable resource for waterfowl and other wildlife.

Mixed riparian - This is a wetland resource type that contains elements of Great Valley Oak Riparian Forest, Great Valley Willow scrub and freshwater marsh. Large areas of this habitat occur near the SR 70/149 intersection in association with Gold Run and Cottonwood Creeks and their tributary drainages, along Dry Creek from SR 149 upstream along Openshaw Road, and in association with Little Dry and Clear Creeks. Species present in this habitat include willow (*Salix bonplandiana* and *S. gooddingii*), Fremont's cottonwood (*Populus fremontii*), white alder (*Alnus rhombifolia*), valley oak (*Quercus lobata*), and narrow-leaved willow (*Salix exigua*), along with grasses, sedges and spikerush.

Other wetlands - These are areas that meet soil, hydrology, and vegetation criteria for wetland delineation, but do not fall within a described community type. Other wetlands within the project area include pastures and other agricultural fields that have altered hydrology and topography. Species present include grasses, and a combination of vernal pool and freshwater marsh species.

Catfish and Exotic Animal Farm – The project area contains ponds that were created for commercial raising of catfish or for exotic wildlife. The ponds are located on the northeast and southeast of the SR 99/149 intersection. There are approximately 76 ponds and a small water treatment facility. Several ponds are filled with water and contain marsh or mixed riparian resources along the periphery. The majority of the ponds, however, are not filled with water or are in use. Many of the drained ponds contain marsh and vernal pool/swale resources that meet the Federal wetland criteria.

Roadway Drainages – Roadway drainages are excavated in dry land and created as part of the roadway facilities. These facilities carry water off the highway into roadside drainages and ultimately into created basins or natural waterways. Roadway drainages are ephemeral, except where natural flows are augmented, such as at the exotic animal farm, cat fish farm and near agricultural activities. Associated species include nut sedge (*Cyperus eragrostis*), verbena (*Verbena officinale*), seep monkey flower (*Mimulus guttatus*), Dallisgrass (*Paspalum distichum*), rabbitsfoot grass (*Polypogon monspeliensis*) and lady's thumb (*Polygonum persicaria*). Shallow depressions in roadside ditches are characterized by vernal pool and swale species such as stalked popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), navarretia (*Navarretia leucocephala*) and wooly marbles (*Psilocarphus brevissimus*). Resources in drainage ditches meeting Federal wetland criteria and identified as part of a natural drainage were delineated as jurisdictional wetlands.

Jurisdictional Non-Wetland Waters

These resources fall under the jurisdiction of the USACOE, but do not meet federal wetland criteria for hydrology, soil and vegetation.

Unvegetated Channel – The project area includes numerous named drainages such as Campbell, Gold Run, Cottonwood, Dry, Clear and Little Dry Creeks, and associated tributaries and unnamed drainages. These waterways vary from ephemeral flows lacking channel vegetation, to larger drainages such as Gold Run, Cottonwood or Dry Creeks with perennial flow and diverse floodplain landscapes.

3.6.2 Impacts

Figure 3-3 summarizes direct impacts to wetlands and other waters of the U.S. for the three alternatives. Permanent impacts were determined as the areas within roadway cut and fill lines. Temporary impacts were determined for the additional area that would be utilized for construction activities. The entire area within the interchanges was considered permanently impacted although most of the area could be restored following construction. For Alternative 3, the preferred alternative, total impacts to U.S. waters would be 8.95 ha (22.12 ac). Impacts to wetlands would be 8.69 ha (21.47 ac). Impacts to other waters would be 0.26 ha (0.64 ac) and would occur primarily at the major streams including Gold Run, Cottonwood, Clear, Dry, and Little Dry Creeks.

Caltrans and FHWA examined two design variations for median width (22 m and 18.6 m) for widening of the SR 149 section of the project. The total impact to jurisdictional waters would be similar for the two variations because the right-of-way and construction footprint is approximately the same. Temporary impacts, however, could be slightly greater for the 22 m median.

Alternative 3 would have the least impact to all types of wetlands and other waters of the U.S. with an area of 8.95 ha (22.12 ac). Alternative 1 would have similar total impacts [9.48 ha (23.32 ac)] but greater impacts to vernal pool and swale wetland types (3.37 ha versus 2.63 ha for vernal pools/swales). Alternative 2 would have the greatest impact to all types of wetlands and other U.S. waters. Impacts to the vernal pool and swale wetland types were similar for Alternatives 1 and 2 (3.37 ha and 3.30 ha). For all alternatives, the majority of impacts to vernal pools and swales would occur along SR 149 from Cottonwood Creek north to the SR 149/99 interchange, with the greatest concentrations between Cottonwood Creek and Shippee Road.

Alternatives 2 and 3 would have greater impacts to the large freshwater marsh associated with Cottonwood Creek. There are, however, opportunities for on-site and in-kind mitigation for impacts to the marsh. Impacts to other waters would be greatest for Alternative 2, and least for Alternative 1.

Based on the evaluation of alternatives, and the identification of Alternative 3 as the preferred alternative/LEDPA, it has been determined that there is no practicable alternative to the proposed new construction in wetlands. A Wetlands Only Practicable Alternative Finding pursuant to Executive Order 11990 is presented in Appendix F.

Figure 3-3. Summary of Biological Impacts

3.6.3 Mitigation

Caltrans and FHWA, in cooperation with CDFG, USACOE, USFWS and USEPA, have developed a Habitat Mitigation and Monitoring Proposal (HMMP) that includes compensation for unavoidable impacts to jurisdictional waters of the United States. The HMMP provides specific details on site location, design and construction of wetland habitats, success criteria, maintenance and monitoring plan, and remedial actions for performance criteria that are not met. Appropriate mitigation ratios have been established and would be confirmed through the Section 404 permit process to ensure no net loss of wetland acreage or habitat function and values. Appendix G, Summary of Mitigation and Monitoring Commitments, contains a summary of the HMMP.

Butte County is also developing a Habitat Conservation Plan (HCP) that would designate certain areas within the County as protected from development. This plan is being developed to address cumulative impacts of the proposed project and other projects within the County.

Vernal Pools and Swales: Vernal pools and swales provide habitat for federally listed vernal pool crustaceans. Mitigation measures have been developed in coordination with the resource agencies to compensate for project impacts to vernal pool fairy shrimp and tadpole shrimp habitat. Preservation of habitat at a 2:1 ratio and creation of habitat at a 1:1 ratio would mitigate permanent impacts to these resources. This would be accomplished by preserving 37.5 ha (92.7 ac) of habitat at a USFWS-approved mitigation bank or purchase of a conservation easement at a 3:1 ratio, and creating 11.87 ha (29.33 ac) of habitat at a USFWS/USACOE-approved site to ensure “no net loss” of habitat. Mitigation for temporary impacts to 0.38 ha (0.94 ac) of vernal pools and swales would consist of restoring the impacted area on-site at a ratio to equal “no net loss” of habitat.

Mixed Riparian, Marsh, Other Wetlands, Wetland Roadway Drainages: Impacts to these resources would be mitigated either on or off-site, or at an approved mitigation bank to ensure no net loss of habitat. The compensatory ratio is based on the type and quality of wetland habitats that are filled or disturbed by the project. The following impacts and mitigation are based on the Alternative 3 and have been developed through coordination with the USACOE, USFWS, NMFS, USEPA, and CDFG:

<u>Impact</u>	<u>Mitigation</u>
Mixed Riparian [0.97 ha (2.4 ac)];	Re-vegetate impacted areas at creek crossings and at created marsh habitat at a 1.5:1 ratio for a total of 1.46 ha (3.56 ac)
Freshwater Marsh [2.7 ha (6.7 ac)];	Create 4.05 ha (10.0 ac) of habitat (1.5:1 ratio) on-site, adjacent to beaver pond area
Other Wetlands [0.47 ha (1.16 ac)];	Create in-kind at a 1.5:1 ratio for a total of 0.71 ha (1.74 ac) at the location for vernal pool shrimp species mitigation
Roadway Drainage [1.17 ha (2.9 ac)];	Replace drainage ditches in-kind, on-site.

Opportunities exist to mitigate wetland and other waters impacts in the vicinity of the SR 70/149 interchange where substantial wetland habitat would remain. Caltrans and FHWA are investigating several mitigation areas both on and off-site that would provide opportunities for preservation and creation of habitat. Mitigation would include the following:

1. Final design would, within safe and prudent limits, reduce cut and fill slopes to minimize impacts to wetland and riparian resources.
2. Resources outside the work area would be designated as ESAs, to be protected during construction. These would be shown on project plans and marked in the field with temporary fencing to provide a visual and physical barrier.

3.7 Vegetation, Fisheries, and Wildlife

This section presents information on vegetation, fisheries and wildlife that could occur within the project area and/or be impacted by the proposed project, but do not have a special status designation, i.e., are not considered rare, threatened or endangered within the State or region by local, State or federal resource agencies. Special status species that could occur in the project area and/or could be affected by the proposed project are discussed in Section 3.8.

3.7.1 Affected Environment

Plant Communities

Three hundred thirty (330) taxa of vascular plants, representing about 70 families, occur within the SR 149 study area. The plant inventory indicates relatively low biodiversity (*BioSystems 1993*) and high incidence of weedy and/or non-native species in the study area. The composition and diversity of plant species found in the project corridor is similar to that of grassland habitats throughout the state, and characteristic of grasslands where long-term agricultural and grazing activities have occurred. State-listed noxious weeds (and numerous other weedy species) occur throughout the project area, and are well established in the vegetation and seed bank.

Agricultural Land – Agricultural lands (row crops, rice fields and orchards) are present throughout the study area. Olive orchards occur on both sides of SR 70 just north of the junction with SR 149. Fruit orchards are found along the south side of SR 149 on both sides of Shippee Road, and along SR 99 between Dry Creek and Cottonwood Road. Row crops occur on the south side of SR 149 west of Dry Creek and along the west side of SR 99 between Durham/Pentz Road and SR 149. Flooded rice fields along the west side of SR 99 north of SR 149 provide important resting and feeding areas for waterfowl.

Disturbed non-native grassland – Roadside vegetation throughout the project limits is composed of disturbed non-native grassland that is dominated by exotic annual grasses and forbs. This ruderal vegetation is typical of the highway cut and fill slopes and is generally limited to a 7.6 – 15 m (25-50 ft) area immediately adjacent to the roadway. Wider areas occur at intersections and where additional land alterations have occurred. The dominant plants are yellow star thistle (*Centaurea solstitialis*), wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), rye (*Lolium multiflorum*), chicory (*Cichorium intybus*), prickly lettuce (*Lactuca serriola*) and vetch (*Vicia sativa* var. *sativa*).

Annual Grassland – The most common vegetation type in the project area is annual grassland. It is present throughout the project limits within the vernal pool and swale complexes that are present along SR 149 and portions of SR 99, and is associated with the rock outcropping in the vicinity of the SR 99/149 intersection. This vegetation type contains many of the same species as disturbed non-native grassland, but it generally has a lower proportion of invasive exotics and contains a variety of native plant species. These grasslands contain many native species such as lomatium (*Lomatium caruifolium*), popcorn flowers (*Plagiobothrys* spp./*Amsinckia* spp.), wine

cup clarkia (*Clarkia purpurea* ssp. *quadrivulnera*), shooting stars (*Dodecatheon clevelandii* ssp. *patulum*), and numerous bulbs of the genera *Allium*, *Brodiaea*, *Dichelostemma* and *Triteleia*. Grassland communities provide habitat for a variety of birds, reptiles and small mammals. Wildlife uses are likely high in the grassland areas adjacent to vernal pools and riparian areas, but values decrease near existing roadways.

Oak Woodland – Within the project limits, oak woodlands occur on old terraces adjacent to riparian corridors, primarily along SR 70 between SR 191 and SR 149, and interspersed with mixed riparian vegetation along Cottonwood and Dry Creeks. Most of the study area contains soil with hardpan, which prevents the establishment of oaks. Some do occur as individual trees or as stands within the annual grasslands. The dominant species is valley oak (*Quercus lobata*), but interior live oak (*Q. wislizenii*) and blue oak (*Q. douglasii*) are also present. Grazing and land alteration activities have eliminated much of the native understory species and reduced regeneration potentials. Oak woodlands provide habitat for a variety of birds, reptiles and small mammals. These woodlands are structurally more diverse than grassland and support a greater diversity of species.

Invasive Species/Noxious Weeds – Grassland habitats in the project area contain numerous species that have been identified by the California Department of Food and Agriculture as noxious weeds. There are eight “C” rated species, this being the lowest threat ranking: yellow starthistle (*Centaurea solstitialis*), Russianthistle (*Salsola kali*), St. Johnswort (*Hypericum perforatum*), field bindweed (*Convolvulus arvensis*), puncturevine (*Tribulus terrestris*), bermudagrass (*Cynodon dactylon*), Johnsongrass (*Sorghum halpense*) and medusahead (*Taeniatherum caput-medusae*). For this ranking, the State recommends eradication only when found in a nursery, and actions to retard spread are at the discretion of the county commissioners. There are six additional plants in the study area that are identified on the State Noxious Weed Index, but are “non-rated.” These species are bullthistle (*Cirsium vulgare*), common groundsel (*Senecio vulgaris*), loosestrife (*Lythrum hyssipifolia*), ladythumb (*Polygonum persicaria*), nightshade (*Solanum americanum*), and witchgrass (*Panicum capillare*).

Fisheries

The following fish species have the potential to be present in creeks within the project area:

- Sacramento Pikeminnow (*Ptychocheilus grandis*)
- Sacramento Sucker (*Catostomus occidentalis*)
- Largemouth Bass (*Micropterus salmoides*)
- Bluegill (*Lepomis macrochirus*)
- Sacramento Perch (*Archoplites interruptus*)
- Catfish (*Ictalurus* sp.)
- Carp (*Cyprinus carpio*)

If present, any/all of these species could be affected by construction activities in or adjacent to streambeds.

Wildlife

The following mammalian species could potentially occur within the project area, and could be affected by the proposed project:

- Pacific Fisher (*Martes pennanti pacifica*)
- Virginia Opossum (*Didelphis virginiana*)
- Northern River Otter (*Lontra canadensis*)
- Mountain Lion (*Puma concolor*)
- Striped Skunk (*Mephitis mephitis*)
- Common Porcupine (*Erethizon dorsatum*)
- Coyote (*Canis latrans*)
- American Beaver (*Castor canadensis*)
- California Ground Squirrel (*Spermophilus beecheyi*)
- Mule Deer (*Odocoileus hemionus*)
- Raccoon (*Procyon lotor*)
- Red Fox (*Vulpes vulpes*)
- Grey Fox (*Urocyon cinereoargenteus*)
- Bobcat (*Lynx rufus*)
- Ringtail Cat (*Bassariscus astutus*)
- Cottontail Rabbit (*Sylvilagus* sp.)
- Jackrabbit (*Lepus* sp.)
- Muskrat (*Ondatra zibethicus*)
- Miscellaneous rodents

The following avian (bird) species could potentially occur within the project area, and could be affected by the proposed project:

- American Goldfinch (*Spinus tristis*)
- American Kestrel (*Falco sparverius*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Belted Kingfisher (*Megasceryle alcyon*)
- Bewick's Wren (*Thyromanes bewickii*)

- Black Phoebe (*Sayornis nigricans*)
- Common Raven (*Corvus corax*)
- Downy Woodpecker (*Dendrocopos pubescens*)
- European Starling (*Sturnus vulgaris*)
- Golden Crowned Sparrow (*Zonotrichia articapilla*)
- Great Blue Heron (*Ardea herodias*)
- Great Egret (*Ardea albus*)
- Greater Yellowlegs (*Totanus melanoleucus*)
- Green Heron (*Butorides virescens*)
- Horned Lark (*Eremophila alpestris*)
- House Wren (*Troglodytes aedon*)
- Killdeer (*Charadrius vociferus*)
- Magpie (*Pica nuttalli*)
- Marsh Wren (*Telmatodytes palustris*)
- Northern Harrier (*Circus cyaneus*)
- Nuttall's Woodpecker (*Dendrocopos nuttallii*)
- Osprey (*Pandion haliaetus*)
- Red-shouldered Hawk (*Buteo lineatus*)
- Red-tailed Hawk (*Buteo Jamaicensis*)
- Rock Wren (*Salpinctes obsoletus*)
- Snowy Egret (*Leucophoyx thula*)
- Song Sparrow (*Melospiza melopia*)
- Turkey Vulture (*Carthartes aura*)
- Western Meadowlark (*Sturnella neglecta*)
- Western Scrub Jay (*Aphelocoma californica*)
- Willow Flycatcher (*Empidonax trailii*)
- Yellow Warbler (*Dendroica petechia*)

3.7.2 Impacts

Plant Communities

Agricultural Land: Impacts to agricultural lands are discussed in Section 3.11, Farmland.

Oak woodlands: For all three build alternatives, the majority of the impact to oak specimen trees and oak woodland would occur within the SR 70/149 interchange construction limits. Within this area, from 27 to 43 oaks and approximately 0.55 ha of woodland would be impacted. Alternative 2 would impact additional trees and oak woodland due to encroachment into the resources of the Dry Creek floodplain. The following table presents impacts for the three build alternatives:

Table 3-3. Oak Impacts

Alternative	Specimen Trees		Oak Woodland	
	No.	dbh (in)	ha	ac
1 – Widen South	31	512	0.52	1.28
2 – Widen North	43	684	0.53	1.31
3 – Avoid BCM	29	456	0.55	1.37

dbh=diameter at breast height

Source: Revised NES, Caltrans 2002

Senate Concurrent Resolution 17 – Oak Tree Protection (SCR 17), which became effective September 1, 1990, states that State agencies should make every effort to protect and avoid impacts to oak woodlands. Oaks in the project area meet the “oak woodland” definition in SCR 17, which requests State Agencies having land use duties and responsibilities to assess the effects of their decisions on any native oak woodlands. SCR 17 also states that native oak woodlands should be preserved and protected, or provisions made for replacement plantings where designated species (blue and valley oak) are removed. The CDFG considers oak woodland habitat as a sensitive resource, requiring mitigation to replace trees removed.

Invasive Species – The proposed construction project would alter the topography and remove vegetation, opening up areas and providing the opportunity for the establishment of introduced or weedy species. Weedy species could also be introduced from vehicles during construction, in materials, or from erosion control, landscape or wildflower plantings. Highway corridors and drainages could provide opportunities for the movement of invasive species through the landscape.

Due to the abundance of weeds in the existing right-of-way, it is assumed that the species currently present would re-establish to similar conditions at the completion of construction. Eradication or control, especially with weedy vegetation surrounding the right-of-way, is not feasible without rigorous, long-term actions. However, measures could be implemented to prevent the introduction of new species, reduce the spread of existing species and promote the establishment of the native flora.

Fisheries

Impacts to the resident fish population could include:

- Loss of or limitation of fish passage
- Temporary destruction of riparian habitat
- Streambed modification

- Temporary increase in siltation and erosion
- Temporary loss of non-natal rearing habitat
- Introduction of non-native vegetation
- Aquatic habitat degradation

Wildlife

Impacts to mammalian species that may be found within the project area could include temporary disturbance of:

- Riparian habitat
- Freshwater marsh habitat
- Aquatic habitats
- Foraging habitat

Impacts could also include:

- Temporary increase in siltation and erosion
- Increased encroachment into native habitats resulting in loss of life due to road kill
- Permanent loss of foraging habitat

Impacts to avian species could include:

- Temporary disturbance/loss of nesting and roosting sites and foraging habitat within riparian and freshwater marsh habitat
- Temporary disturbance/ loss of foraging habitat within aquatic habitats
- Permanent loss of habitat

3.7.3 Mitigation

Plant Communities

Oak Woodlands – Measures would be incorporated into the proposed project to protect trees outside the designated work area during construction, minimize the number of oaks that would be removed, and mitigate for oak woodland habitat impacted. A replacement ratio of one oak seedling or sapling planting for each inch of specimen tree removed (measured by the diameter of the tree at breast height, or ‘dbh’) would be proposed due to the difficulties associated with establishing oak trees in this area. Permanent impacts to 0.55 ha (1.37 ac) of oak woodlands and 29 specimen trees would be mitigated through replacement planting on-site.

Following construction, there would be considerable right-of-way acreage, particularly in the vicinity of the SR 70/149 interchange, that would be available for oak plantings. The majority of the oak impacts would be along SR 70 and within the SR 70/149 interchange, which is adjacent to existing oak woodlands and associated riparian habitat. Mitigation, therefore, should be performed near the area of impact. Mitigation credits for any additional oak woodland acreage that may be required would be purchased from an approved bank such as from the Chico State Research Foundation, which has available credits within Butte County.

CDFG has reviewed the oak/riparian habitat mitigation plan. This plan includes implementation schedule, site location, site preparation, planting and establishment techniques, maintenance, performance criteria, commitments for monitoring and remedial actions for performance criteria not met. In addition, the following items would be implemented:

- Oak trees to be avoided during construction would be identified on project plans as ESAs and marked in the field by staking or fencing the tree canopies.
- A tree count would be made at the end of project construction to verify the number of trees removed. This number would be used to finalize the oak mitigation plan.

Invasive Species/Noxious Weeds – In accordance with Executive Order 13112 addressing introduction of invasive species, the following measures would be proposed:

- Construction vehicles would be cleaned and inspected prior to entering the project area.
- All erosion control materials (including straw bales and mulch) would be certified weed-free.
- All disturbed areas would be stabilized and re-vegetated at the completion of construction. This would involve the placement of seed, slow release organic fertilizer, compost and mulch.
- Seed and container plants used in the project would be species found in the project area and would be genetic stock from the Sacramento Valley.

Fisheries

Impacts to resident fish would be avoided or minimized through ongoing consultation with the NMFS, CDFG, USACOE, USFWS, and Central Valley Regional Water

Quality Control Board, and through mitigation measures employed to protect special status fish, as outlined in Section 3.8.3, Salmonids and their Critical Habitat.

Wildlife

The following BMPs and/or mitigation measures would be incorporated into the project, as deemed necessary from coordination with CDFG, USFWS, and USACOE, to minimize/mitigate impacts to wildlife species that may be present in the project area:

- Restore streamside and riparian habitat disturbed by construction. Prior to vegetation removal, the area of impact would be surveyed by a qualified biologist for a complete assessment of all species present and their relative quantities. Riparian vegetation would be cut by hand (where applicable) to ground level in temporary use areas to allow for re-growth following construction. After construction, compensation for the lost and disturbed riparian vegetation would occur on-site and in-kind at a ratio to be determined by consultation with the CDFG to ensure “no net loss” of riparian habitat. Restoration areas would be planted with native plants of the same species that were affected or removed during construction. The banks of the disturbed channels would be restored and re-graded to maximize the growth of riparian vegetation. The upland areas would be restored and re-graded to slow the overland flow of rainwater and provide a variety of hydrologic conditions.

Restoration efforts would be monitored annually by a qualified biologist for five years after completion of construction. Success would be determined by survival percentages of replanted species. If performance standards as agreed to in the HMMP were not met, remedial measures such as replanting would be implemented.

- Minimize disturbance to creek channel and adjacent areas. Disruption of the streambed and bank, and adjacent riparian corridor would be minimized. All areas outside of and adjacent to the construction limits would be designated as Environmentally Sensitive Areas (ESAs) and would be fenced to prevent disturbance of these areas. Disturbed areas would be graded and temporary erosion control methods employed to prevent surface erosion and siltation of the waterways. BMPs would be utilized to prevent contamination of stream- side soil and adjacent waters from construction material and debris. Stream banks and

adjacent areas would be revegetated after construction to avoid increased erosion from subsequent storms and associated runoff.

- A drainage system has been designed to maintain the water level of the freshwater marsh and beaver dam area, and prevent ponding and flooding of the roadway right-of-way. This system would be constructed adjacent to the new roadway to minimize loss of habitat. Temporary impacts to the freshwater marsh would be minimized through the use of Cofferdams instead of complete de-watering.
- All bridge construction and renovation as well as culvert extensions would allow for the passage of small wildlife under the roadway. All culverts and box structures would be continuous from both sides of the roadway, reducing the potential for road kill. All in-stream cattle fences (attached to State highway structures, or within the State right-of-way) would be removed and not replaced. This would allow larger wildlife to cross under the roadway.
- Loss of foraging habitat due to direct or indirect impacts would be mitigated within oak woodland, riparian and/or wetland habitats at a ratio to ensure “no net loss” of habitat.
- Vegetation removal would be minimized. Vegetation removed would be replaced in-kind at ratios to be determined through consultation with CDFG and the USFWS.
- Work windows may be implemented to avoid or minimize impacts.
- If an occupied or unoccupied nest were removed, appropriate mitigation would be undertaken to replace lost habitat at a ratio to be determined by the CDFG and USFWS.

3.8 Special Status Species

Special status plant and animal species are those that are considered rare, threatened or endangered within the State or region by local, State or federal resource conservation agencies. These agencies include the USFWS, CDFG, NMFS and the California Native Plant Society (CNPS). Special status species are either protected or being considered for protection under the federal Endangered Species Act (ESA), California Endangered Species Act, California Native Plant Protection Act, or the California Fish and Game Code. Appendix H contains a USFWS list of endangered

and threatened species that may be present in or may be affected by the proposed project.

3.8.1 Affected Environment

The project area has high potential for the occurrence of special status species due to the diversity of plant communities, abundance of wetland habitat types, low degree of habitat alteration and minimal commercial/residential land uses. To identify species of concern, Caltrans consulted State and Federal sensitive species lists and the California Natural Diversity Database (*CNDDDB 2000*), and met with various resource agency representatives. Coordination with the USFWS is referenced in Appendix A. Field studies were done in 1992 and 1993 by Biosystems, and in 1997-1999 and 2001 by Caltrans (*Caltrans, 2000*).

An annotated list of special status species that may occur or are present in the project area is provided in Tables 3-4 & 3-5 below. Many of the species listed have not been observed in the project area, but potential habitat is present.

Table 3-4. Rare and Sensitive Animal Species

(Species in **bold type** are discussed in this document)

Common Name	Scientific Name	Status	Habitat	Potential For Occurrence	Observed/ Effected?
Birds					
Northern goshawk	<i>Accceptor gentilis</i>	FSC, CSC	Nests in the vicinity of coniferous forest. Usually nests on north slopes near water in conifers and aspens.	No suitable nest habitat	Not observed; No effect.
Tricolored Blackbird	<i>Agelaius tricolor</i>	FSC, CSC	Associated with emergent wetlands with dense cattails/tules but also thickets of willow, blackberry and wild rose	Suitable habitat	Not observed; Potential Impact
Golden Eagle	<i>Aquila crysaetos</i>	CSC, Fully Protected	Rolling foothill or coast-range terrain, where open grassland turns to scattered oaks, sycamores, foothill pine.	Potential foraging habitat.	Not observed; Potential Impact
Western Burrowing Owl	<i>Athene cunicularia hypugea</i>	FSC, CSC	Associated with open dry grassland and desert habitats. Nest in burrows in old ground squirrel.	Suitable habitat	Not observed; Potential impact
Aleutian Canada Goose	<i>Branta canadensis leucoprareia</i>	Delisted	Nests on ground (scrape nest) in freshwater and brackish marshes, meadows, small islands.	Marginal habitat	Not observed; No effect.
Ferruginous Hawk	<i>Buteo regalis</i>	FSC, CSC	Migratory wintering bird (non-nesting) in CA. Requires large open grasslands, shrub, or desert.	Suitable foraging habitat present	Not observed; Potential impact
Swainson's Hawk	<i>Buteo swainsoni</i>	CT	Open grasslands with scattered large trees for nesting.	Suitable nesting and foraging habitat	Observed foraging; Potential Impact
Little Willow Flycatcher	<i>Empidonax trailii brewsteri</i>	FSC, CE	Nests in willow or alder thickets in low valleys, swamps, canyons, high mountain meadows.	Marginal habitat	Migrant observed; No effect.
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Delisted, CE	Woodland, forest, and coastal habitats. Forage in open country. Nesting on protected ledges of high cliffs, buildings, bridges	No suitable nesting habitat.	Not observed; No effect.
Bald Eagle	<i>Halieetus leucocephalus</i>	FT, CE Fully Protected	Aquatic ecosystems: estuaries, rivers, reservoirs and large lakes. Nests near open water in area w/some old growth components	No suitable nesting habitat.	Not observed; No effect.
White-Faced Ibis	<i>Plegadis chihi</i>	FSC, CSC	Nests in extensive marshes. Forage in dense emergent vegetation in shallow water or muddy fields	No suitable nesting habitat.	Not observed; No effect.
California Spotted Owl	<i>Strict occidentalis occidentalis</i>	FSC, CSC	Multi-layered coniferous forests	No suitable habitat	No effect.

White-tailed Kite	<i>Elanus caeruleus</i>	CA fully protected	Low, rolling foothills/ valley margins with scattered oaks and river bottomlands or marshes adjacent to deciduous woodland.	Suitable habitat	Observed; Potential impact
Reptiles					
Northwestern Pond Turtle	<i>Clemmys marmorata marmorata</i>	FSC, CSC	Slow or still water with some vegetation, access to basking sites and upland oviposition sites.	Suitable habitat; limited basking sites	Observed in Cottonwood Creek; Potential impact
California Horned Lizard	<i>Phrynosoma coronatum frontale</i>	FSC, CSC	Exposed sandy gravelly substrate, clearings in riparian habitat, annual grasslands with scattered perennial seepweed.	Marginal habitat	Not observed; No effect.
Giant Garter Snake	<i>Thamnophis gigas</i>	FT, CT	Aquatic species. Freshwater marsh and low gradient streams and sloughs with mud bottoms, also temporary water such as drainage canals and irrigation ditches.	Limited suitable habitat; not within range of known distribution	Not observed; No effect.
Amphibians					
California tiger Salamander	<i>Ambystoma tigrinum californiense</i>	FSC, CSC	Grasslands and open foothill woodlands with vernal pools for breeding and available rodent burrows for aestivation	Marginal habitat	Not observed; No effect
California Red-Legged Frog	<i>Rana aurora draytoni</i>	FT, CSC	Coastal and foothill drainages. Slow and still deepwater (1m or greater) pools with emergent and floating veg.	Marginal habitat	Not observed; No effect.
Foothill Yellow-Legged Frog	<i>Rana boylei</i>	FSC, CSC	Coastal and foothill drainages. Shallow flowing water in small to moderate sized streams with at least some cobble-sized substrate.	Marginal habitat	Not observed; No effect.
Western Spadefoot Toad	<i>Scaphiopus hammondi</i>	FSC,CSC	Breed in temporary pools that last minimum of 3 weeks. In grassland, valley/foothill hardwood woodlands.	Suitable habitat	Not observed; Potential impact.
Fish					
Green Sturgeon	<i>Acipenser medirostris</i>	FSC,CSC	An anadromous species found in the lower reaches of large rivers, including the Sacramento River.	No suitable habitat.	No effect
Delta Smelt	<i>Hypomesus transpacificus</i>	FT, CT	Brackish waters of Sacramento-San Joaquin estuaries (San Pablo, Suisun, and San Francisco Bays, inland to San Joaquin and Sacramento Counties)	No suitable habitat.	No effect
Steelhead – Central Valley ESU	<i>Oncorhynchus mykiss</i>	FT	Sacramento-San Joaquin Rivers and their tributaries. Spawn in small streams where cool, well-oxygenated water is available year round.	Migratory and rearing habitat	Potential impact

Critical Habitat – Steelhead - Central Valley ESU	<i>Oncorhynchus mykiss</i>		Juvenile rearing areas, juvenile migration corridors, areas for growth and development to adulthood, adult migration corridors, and spawning areas within creeks and riparian corridor.	Project is within the geographic range of critical habitat	Potential impact
Chinook Salmon – Central Valley fall/late fall run	<i>Oncorhynchus tshawytscha</i>	FSC	Spawns only in the Sacramento River in cold water above the Red Bluff Diversion Dam	Potentially habitat	Potential impact
Chinook salmon – Central Valley Spring-run	<i>Oncorhynchus tshawytscha</i>	FT, CT	Spawns in deeper water and larger gravel sizes (cantaloupe) than other salmon. Most spawning and rearing activity take place in the main stream channels above the saltwater limit or hundreds of miles upstream.	Potential rearing habitat	Potential impact
Critical Habitat – Chinook salmon – Central Valley Spring-run	<i>Oncorhynchus tshawytscha</i>		Juvenile rearing areas, juvenile migration corridors, areas for growth and development to adulthood, adult migration corridors, and spawning areas within creeks and riparian corridor	Project is within the geographic range of critical habitat	Potential impact
Sacramento splittail	<i>Pogonichthys macrolepidotus</i>	FT, CSC	Lower reaches of all rivers tributary to the Delta. Slow moving section of rivers and sloughs dominated by emergent and floating vegetation.	Marginal habitat; not within range of known distribution	Not observed; No effect.
Invertebrates					
Antioch Dunes Anthicid Beetle	<i>Anthiscus antiochensis</i>	FSC	Loose, fine grained sand which is sparsely vegetated	No suitable habitat	No effect
Sacramento Anthicid Beetle	<i>Anthiscus sacramento</i>	FSC	Loose, fine-grained sand deposited by wind, water or man , which is sparsely vegetated	No suitable habitat	No effect
Conservancy Fairy Shrimp	<i>Branchinecta conservatio</i>	FE	Larger vernal pools, seasonal wetlands.	No suitable habitat	No effect
Vernal Pool Fairy Shrimp	<i>Branchinecta lynchi</i>	FT	Temporary pools in grass or mud-bottomed swales, basalt flow depressions in unplowed grasslands.	Suitable habitat	Observed; Potential impact
Sacramento Valley Tiger Beetle	<i>Cicindella hirticollis abrupta</i>	FSC	Known from the Feather River near the town of Nicholas, habitat is thought to be barren or sparsely vegetated sandy shorelines or beaches of rivers, on sandbars or sandy alluvial fans.	No suitable habitat	No effect
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	FT	Riparian habitat in Central Valley to 3,000 ft elev. All life stages dependant on elderberry host plant	Host plant present	Potential impact

Vernal Pool Tadpole Shrimp	<i>Lepidurus packardii</i>	FE	Temporary pools of very low conductivity and alkalinity; grass-bottomed swales in old alluvial soils underlain by hardpan or in mud-bottomed pools containing highly turbid water.	Suitable habitat	Observed; Potential impact
Mammals					
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	FSC; CSC	Associated w/ mines and caves, and "cave like" structures. Old buildings may provide suitable roost sites. Low desert to middle elevation montane forests. Extremely sensitive to disturbance of roost site.	No suitable habitat	No effect.
Marysville Heerman's Kangaroo Rat	<i>Dipodomys californicus eximius</i>	FSC, CSC	Sierra and coastal foothills up to hardwood-conifer belt. Prefer dry grassy plains with moderate shrub cover. Well drained soils required for burrows	Marginal habitat (clay soils)	Not observed; No effect
Spotted Bat	<i>Euderma maculatum</i>	FSC; CSC	Rocky cliffs, caves, mines. Forage in open woodlands and forests	No suitable habitat	No effect
Greater Western Mastiff Bat	<i>Eumops perotis californicus</i>	FSC; CSC	Roosts in high cliff crevices, forages high over canopy	No suitable habitat	No effect
Pacific Fisher	<i>Martes pennanti pacifica</i>	FSC; CSC	Large-tree- stages of coniferous forests, deciduous riparian. Prefers high percent canopy closure.	No suitable habitat	No effect
Small Footed Myotis	<i>Myotis ciliolabrum</i>	FSC	Many habitats. Crevice and cavity roosts. Forage in open	Limited suitable habitat	Not observed; Potential impact
Long Eared Myotis	<i>Myotis evotis</i>	FSC	Forest associated. Roosts in caves, mines, trees, crevices, bridges. Forage in vegetation and near ground	Limited suitable habitat	Not observed; Potential impact
Fringed Myotis	<i>Myotis thysanodes</i>	FSC	Mixed forests. Roosts in buildings, mines. Also tree hollows, cliffs. Forage in vegetation	Limited suitable habitat	Not observed; Potential impact
Long Legged Myotis	<i>Myotis volans</i>	FSC, CSC	Many habitats. Roosts in hollow trees and snags. Also crevices, mines, caves.	Limited suitable habitat	Not observed; Potential impact
Yuma Myotis	<i>Myotis yumanensis</i>	FSC, CSC	Associated w/ low elevation reservoirs. Roosts in buildings and structures, trees, mines, caves, crevices. Open water for forage	Limited suitable habitat	Not observed; Potential impact
San Joaquin Pocket Mouse	<i>Perognathus inornatus</i>	FSC	Grasslands and blue oak savannas with fine-textured, friable soils, and on friable soils in alkali sinks and in Atriplex associations of the Tulare Basin.	Potentially suitable habitat	Not observed; No effect

FE: Federal Endangered; **FT:** Federal Threatened; **FPE:** Federal Proposed Endangered; **FPT:** Federal Proposed Threatened; **CE:** CA Endangered; **CT:** CA Threatened; **CSC:** CDFG Species of Special Concern; **FSC:** USFWS Species of Special Concern

Table 3-5. Rare and Sensitive Plant Species

(Species in **bold type** are discussed in this document)

Common Name	Scientific Name	Status	Habitat	Survey period	Elevation Range (m)	Comments
Depauperate Milk Vetch	Astragalus pauperculus	CNPS 4	Cismontane woodland, valley and foothill grassland; vernally mesic, volcanic sites	March-June	60 - 855	Observed in project area; potential impact
Ferris's Milk Vetch	<i>Astragalus tener</i> var. <i>ferrisae</i>	FSC, CNPS 1B	Vernally mesic meadows, Valley foothill grassland, Sub-alkaline flats	Apr.-May	5 - 75	Not observed.
Butte County morning-glory	<i>Calycadenia oppositifolia</i>	FSC, CNPS 1B	Cismontane woodland, valley and foothill grassland, Butte County	April-July	215 - 945	Not observed
Fox sedge	<i>Carex vulpinoidea</i>	CNPS 2	Freshwater marshes, swamps and riparian woodlands	May – June	30 - 1200	Not observed.
Hoover's Spurge	<i>Chamaescyche hooveri</i>	FT, CNPS 1B	Vernal pools	July	25 - 250	Not observed in project area; Observed in Pentz Pool adjacent to project area.
Mosquin's clarkia	<i>Clarkia mosquinii</i>	FSC, CNPS 1B	Cismontane Woodlands, usually on steep, rocky cutbanks and slopes	May-July	185 - 640	Not observed.
Four-angled spikerush	<i>Eleocharis quadrangulata</i>	CNPS 2	Freshwater marshes and swamps	May – Sept.	20 - 500	Not observed.
Butte Fritillary	<i>Fritillaria eastwoodiae</i>	FSC, CNPS 3	Dry benches and slopes of chaparral, cismontane woodlands and openings in lower coniferous forests	March-May	50 - 1500	Not observed.

Adobe Lilly	<i>Frittilaria pluriflora</i>	FSC, CNPS 1B	Adobe soils; valley/foothill grassland, chaparral, cismontane woodland; usually on clay soils	Feb.-Apr.	60 - 705	Not observed.
Rose-mallow	<i>Hibiscus lasiocarpus</i>	CNPS 2	Freshwater marshes and swamps	June – Sept.	0 - 120	Not observed
Ahart's Rush	<i>Juncus leiospermus</i> var. <i>ahartii</i>	FSC, CNPS 1B	Vernal pools	March-May	30 - 100	Not observed
Red Bluff dwarf rush	<i>Juncus leiospermus</i> var. <i>leiospermus</i>	CNPS 1B	Chaparral, valley and foothill grassland, cismontane woodlands.	April	35 - 1020	Not observed
Butte County Meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>californica</i>	FE, CE, CNPS 1B	Vernal pools, mesic valley/foothill woodland	March-May	50 - 930	Observed; Potential impact
Wooly Meadowfoam	<i>Limnanthes floccosa</i> ssp. <i>floccosa</i>	CNPS 4	Margins of vernal pools, moist meadows in the Klamath and Cascade ranges, and Butte and Lake counties	March - June	<300	Not observed in project limits
Shield-bracted monkeyflower	<i>Mimulus glaucescens</i>	CNPS 4	Cismontane woodland, valley and foothill grassland	Feb-August	60 - 1220	Not observed
Veiny Monardella	<i>Monardella douglasii</i> ssp. <i>venosa</i>	FSC, CNPS 1B	Heavy clay soils of Valley and Foothill grasslands, oak woodlands and chaparral	May	60 - 410	Not observed.
Hairy Orcutt Grass	<i>Orcuttia pilosa</i>	FE, CE, CNPS 1B	Vernal pools	May-Aug.	55 - 200	Not observed; Recorded from Pentz Pool adjacent to project area.
California adder's-tongue fern	<i>Ophioglossum lusitanicum</i> spp. <i>Californicum</i>	CNPS 4	Vernal pools	Dec - May	60 - 300	Not observed
Ahart's paronychia	<i>Paronychia ahartii</i>	FSC, CNPS 1B	Valley and foothill grassland	March - June	30 - 510	Not observed
California beaked-rush	<i>Rhynchospora californica</i>	FSC, CNPS 1B	Freshwater seeps, open marshes	May – July	45 - 1010	Not observed.

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Valley Sagittaria	<i>Sagittaria sanfordii</i>	FSC, CNPS 1B	Shallow freshwater	May-Aug.	0 - 610	Not observed.
Tracy's Sanicle	<i>Sanicula tracyi</i>	FSC, CNPS 4	Openings in Cis-montane Woodland, Lower and Upper Coniferous Forests; dry gravelly slopes or flats.	Apr-July	100 - 1585	Not observed.
Butte County Checkerbloom	<i>Sidalcea robusta</i>	FSC, CNPS 1B	Cismontane woodland, chaparral	Apr.-June	90 - 1600	Not observed.
Butte County Golden Clover	<i>Trifolium jokerstii</i>	CNPS 1B	Moist swales and depressions in open grassland. Only found in Butte County.	March - May	200 – 1200	Not observed.
Greene's Tuctoria	<i>Tuctoria greenei</i>	FE, CR, CNPS 1B	Vernal Pools	May-July	30 - 1070	Not observed; Recorded from Pentz Pool adjacent to project area..

CE: CA Endangered; **CT:** CA Threatened; **CR:** CA Rare; **FE:** Federal Endangered; **FT:** Federal Threatened; **FPE:** Federal Proposed Endangered; **FPT:** Federal Proposed Threatened; **FC:** Federal Candidate for Listing; **FSC:** Federal Species of Concern; **CNPS List 1B:** California Native Plant Society list of plants rare, threatened or endangered in California; **CNPS List 2:** California Native Plant Society list of plants rare, threatened or endangered in California, but more common elsewhere; **CNPS List 3:** California Native Plant Society list of plants about which there is a need for more information; **CNPS List 4:** California Native Plant Society list of plants of limited distribution- a watch list plant

Birds

Cliff swallows (*Hirundo pyrrhonota*). Cliff swallows are currently nesting on the underside of the bridges at Clear Creek, Dry Creek, Little Dry Creek, Gold Run Creek (on SR 70 & 149) and Campbell Creek. They are protected by the Federal Migratory Bird Treaty Act from activities that could disturb nesting.

Tricolored blackbird (*Agelaius tricolor*; federal and State species of concern). Tricolored blackbirds occur infrequently throughout lowland California where colonies nest in wetland habitats with large stands of emergent vegetation. The closest nest site was reported in 1983, 10 miles north of the project area. No tricolor blackbirds have been observed in the project area although some suitable nesting habitat is present.

Swainson's Hawk (*Buteo swainsoni*; State threatened). Swainson's hawk is a summer migrant to the Central Valley that arrives on its nesting grounds in March. Nests are typically located in large trees associated with riparian areas adjacent to open grasslands or agricultural fields. There are several nest sites reported for Butte County that are all located to the west of the project area (CNDDDB 2001). The closest active nest was recorded in 1994 and is located 8.4 km (5.2 mi) west of the project area along Butte Creek. Three additional nest sites occurring within 10 miles of the project area were reported in 1994 and 1998. These occurrences include two additional nests recorded on Butte Creek in 1994 and one nest at the Chico State Farm, approximately 11.6 km (7.2 mi) from the project site.

Within the project area, there is potential nesting habitat in the riparian corridor along Dry Creek, upstream from SR 149, where eucalyptus and cottonwood trees are growing within the right-of-way at the SR 99/149 intersection. Annual grassland and agricultural cropland within the project area provides foraging habitat for this hawk. Swainson's hawks were not observed during 1997 spring and summer surveys, but were observed foraging along the Dry Creek corridor during reconnaissance surveys in 1999 and 2001.

Other Raptors:

A number of raptor species are known to or may potentially occur in the study area and may be impacted by the project. Riparian forest and woodland provide nesting habitat for species such as the Cooper's Hawk (*Accipiter cooperii*), and White-Tailed Kite (*Elanus caeruleus*). Annual grassland in the project area provides foraging habitat for raptors including Ferruginous Hawk (*Buteo regalis*), and Golden Eagle

(*Aquila chrysaetos*). Some species such as the White-Tailed Kite establish communal roost sites during the non-breeding season (Polite, 1990). Five White-Tailed Kites were observed roosting in a large tree adjacent to the freshwater marsh on SR 149 near SR 70, indicating a potential roost site.

Western Burrowing Owl (*Athene cunicularia hypugea*, federal and State species of special concern): This species is protected by the Federal Migratory Bird Treaty Act. It is associated with open dry grassland habitat, and builds nests in burrows in the ground. Potential habitat is present within the project area, though this species has not been observed during field surveys.

Reptiles

Northwestern Pond Turtles (*Clemmys marmorata*). Northwestern pond turtles are a federal species of concern and State species of special concern. Suitable habitat for this species can be found in marshes, rivers, streams, and irrigation ditches with emergent vegetation (Stebbins, 1985). Habitat quality appears to be associated with the availability of basking and upland oviposition sites within close proximity of water. Adult turtles may overwinter in upland sites, enabling them to occupy creeks or waterways that are dry for several months each year. Pond turtles were observed within the channel of Cottonwood Creek north and south of SR 149 and within the freshwater marsh associated with the beaver dams adjacent to SR 149.

Amphibians

Western Spadefoot Toad (*Scaphiopus hammondi*; federal and State species of concern). A near California endemic, this toad requires temporary rain pools, including vernal pools, lacking predatory species such as introduced fishes, bullfrogs, and crayfish. The toads require pools lasting at least 3 weeks or more for successful reproduction. The project area may provide suitable habitat for this species, although it was not observed during field surveys.

Fish

The following special status fish species could potentially be impacted by the proposed project:

- Central Valley spring-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawtscha*, federal and State threatened)
- Central Valley Steelhead ESU (*Oncorhynchus mykiss*, federal threatened)

There are five creeks within the project area: Little Dry Creek on SR 99, and Clear, Dry, Gold Run, and Cottonwood Creeks along SR 149. All five creeks are tributaries to Butte Creek, which supports the above listed salmonid species. However, sensitive salmonid species are not expected to spawn or rear in the drainages within the project area as they lack suitable upstream spawning habitat, are subject to increased water temperatures that do not support reproducing anadromous fisheries, and only contain salmonid species during high flow incidents (Ward, CDFG pers. Comm. 2001).

Drainages within the project area are within the geographic range of designated Critical Habitat and may contain the criteria for Essential Fish Habitat for the associated salmonid species. Critical Habitat and Essential Fish Habitat for the following species may potentially be affected by the proposed project:

- Central Valley spring-run Chinook salmon Critical Habitat
- Central Valley Steelhead Critical Habitat
- Central Valley fall-run and late fall-run Chinook salmon Essential Fish Habitat

Spring-run Chinook and steelhead designated Critical Habitat includes all features that contribute to riparian function. Fall-run Chinook Essential Fish Habitat is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (65 FR 32:7764-7787).

Invertebrates

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*, “VELB,” federal threatened). VELB are found in association with their host plant, the elderberry shrub (*Sambucus mexicana*), upon which all stages of the VELB life cycle depend. The elderberry shrub is not designated critical habitat. Elderberry shrubs are found in riparian forests and adjacent upland habitats throughout the Central Valley watershed to the west, and surrounding foothills to the east up to 3,000 feet in elevation.

The project site was surveyed in April 1993 by BioSystems, who documented 47 elderberry shrubs in five discrete areas. One shrub growing along a ditch near the southeast end of SR 149 had a single VELB exit hole (evidence of the beetle’s presence).

Caltrans’ most recent survey for shrubs and beetle exit holes in the project area occurred in spring 2001. Thirty-nine (39) shrubs were found, with one showing evidence of VELB use (i.e. exit holes). However, several shrubs were not accessible

to examine for exit holes. Most of these shrubs are located in the riparian corridors within the proposed SR 70/149 interchange area, and along Dry Creek. Adult VELB were not observed during either the BioSystems or Caltrans surveys.

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp (*Branchinecta lynchi*, federal threatened; *Lepidurus packardii*, federal endangered). Potential habitat was identified using survey locations determined by BioSystems in 1993, and updated and revised in 1999 and 2001 by Caltrans (Figure 2-4 through Figure 2-6). Protocol surveys were not conducted for the entire project area; therefore, Caltrans is assuming the presence of sensitive fairy and tadpole shrimp species in all potential habitats. Potential habitat includes ponded areas in vernal pools and swales, other wetlands, and roadway drainages (wetland and non-wetland).

Bats

Several special status species of bats (Table 3-4) may potentially occur within the project area. Their presence is dependent on the availability of suitable habitat. These bats may use bridges, buildings, trees, and/or natural structures (trees, caves, rock cavities) for day and/or night roosts. One or more of these structures could also be used as a maternal roost. Several stream and wetland habitats, including freshwater marshes within the project area, provide suitable foraging habitat for bats.

Plants

Butte County Meadowfoam (BCM) (*Limnanthes floccosa* ssp. *californica*, federal and State endangered). This plant is found within vernal pool and swale habitat, and in drainage ditches in the vicinity of Gold Run Creek. Twelve sub-populations have been recorded within the project area, and the locations are shown in Figure 2-4 through Figure 2-6.

Depauperate Milk Vetch (*Astragalus pauperculus*) is a California Native Plant Society (CNPS) List 4 plant of limited distribution, considered a “watch list” species. Depauperate Milk Vetch has no other State or federal designation. There are five populations consisting of thousands of individuals in the study area.

3.8.2 Impacts

Species addressed in this section are those that were identified during project surveys, have high probability of occurring in the project area or required focused/protocol surveys. Survey methods and additional species information can be found in the Natural Environment Study.

Cliff swallows: Impacts could occur from construction/repair of bridge structures if work is conducted during the nesting period. Impacts would be similar for all alternatives.

Tricolored blackbird: Impacts could occur from removal of vegetation that may provide potential nesting habitat.

Swainson's Hawk: Within the project area, suitable foraging habitat for Swainson's hawk includes agricultural fields, annual grassland, and ruderal areas along the roadside. There is one record of an active Swainson's hawk nest site within 16 km (10 mi) of the project site (*CNDDB 2001*). Figure 3-3 shows potential foraging habitat impacts, which would be similar for the three build alternatives. Conservation guidelines suggest that any loss of foraging habitat within 16 km (10 mi) radius of an active nest tree (i.e. used during one or more of the last 5 years) would require mitigation (*CDFG 1994*). Prior to construction, surveys would be conducted to confirm the presence/absence of active Swainson's nests in the project area.

Other Raptors: The project may directly eliminate potential foraging, nesting, and/or roosting habitat for the raptors including white-tailed kite, golden eagle and ferruginous hawk. Potential impacts are similar for all alternatives.

Western Burrowing Owl: Impacts to this species could occur throughout the project area from the following actions:

- Disturbance within 50 m (160 ft) of occupied burrows which may result in harassment of owls,
- Destruction of natural and artificial burrows (culverts, concrete slabs, and debris piles that provide shelter),
- Destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow.

Potential impacts would be similar for all build alternatives.

Northwestern Pond Turtle: Construction of the SR 70/149 interchange, connector ramps, and highway widening may affect pond turtles due to disturbance of the marsh habitat utilized by the turtles. All build alternatives would result in a permanent loss of occupied habitat. The estimated impact to freshwater marsh habitat associated with Cottonwood Creek is 1.07 ha (2.64 ac) for Alternative 1, 2.00 ha (4.95 ac) for Alternative 2, and 1.87 ha (4.61 ac) for Alternative 3.

Western Spadefoot Toad: While this species has not been observed within the project limits, suitable habitat is present. Impacts could occur from construction activities in vernal pools and swales (see discussion of Vernal Pool Fairy and Tadpole Shrimp impacts on the following page).

Salmonids and their Critical Habitat: Due to the timing of the various runs of Chinook and steelhead, there is potential for juvenile non-natal rearing to occur upstream and downstream of the project areas in the adjacent tributaries at various times throughout the year.

Roadway widening, bridge construction and/or rehabilitation, and other activities adjacent to creeks in the project area could potentially impact listed salmonids and their critical habitats. Impacts to these species as well as to the resident fish population could include:

- Take or harassment
- Temporary destruction of riparian habitat
- Streambed modification
- Temporary increase in siltation and erosion
- Temporary loss of non-natal rearing habitat
- Introduction of non-native vegetation
- Aquatic habitat degradation
- Temporary reduction of downstream flow

The width or depth of the various streams and creeks would not be altered by construction of the proposed project. Construction related activities would not result in a loss of spawning habitat and/or spawning gravels. Fish passage would be maintained during all stages of project construction. The following table presents impacts to salmonid habitat:

Table 3-6. Salmonid Habitat Impacts

Alternative	Impact ha (ac)
1. Widen South	1.06 (2.62)
2. Widen North	0.86 (2.13)
3. Avoid BCM	0.89 (2.20)

Source: Revised NES, Caltrans 2002

Impacts would be minimized or avoided through BMPs, mitigation, and consultation with the USFWS, NMFS and CDFG. Work windows and design technologies would be implemented to minimize or avoid impacts.

Valley Elderberry Longhorn Beetle: Direct impacts to VELB could occur from the removal of elderberry shrubs within the construction limits due to excavation, fill and grading activities. Adjacent elderberry shrubs within 6 m (20 ft) of construction may also be indirectly affected. Indirect affects to VELB may occur due to the physical presence of work activities, increases in dust, or alterations in topography and drainage, which affect the survival of the elderberry shrubs. An initial estimate of direct and indirect impacts to VELB (using spring 2001 survey data) for each alternative are presented in the following table:

Table 3-7. VELB Impacts

	Direct Impact	Indirect Impact
Alternative	Number Elderberry Shrubs	Number Elderberry Shrubs
1- Widen South	22	3
2- Widen North	17	13
3- Avoid BCM	22	0

Source: Revised NES, Caltrans, 2002

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp: Vernal pool shrimp species habitat includes ponded areas in vernal pools and swales, other wetlands, and roadway drainages (wetland and non-wetland). The following table shows the estimated impacts for each of the build alternatives:

Table 3-8. Vernal Pool Fairy Shrimp/Tadpole Shrimp Habitat Impacts

Alternative	Direct Impact ha (ac)	Indirect Impact ha (ac)	Total Impact ha (ac)
1. Widen South	13.6 (33.6)	5.7 (14.0)	19.2 (47.5)
2. Widen North	12.1 (30.0)	6.8 (16.8)	18.9 (46.8)
3. Avoid BCM	11.9 (29.3)	6.9 (17.0)	18.8 (46.3)

Source: Revised NES, Caltrans 2002

Direct impacts to habitat would occur from cutting slopes, placing fill and grading activities. These impacts would be considered permanent, causing changes in the configuration of habitat. Modifications of habitat would likely affect inundation and ponding duration, potentially resulting in the take of Fairy and Tadpole shrimp. These effects would be concentrated where the alteration occurs, at the time of

construction. Estimates of direct impact to fairy and tadpole shrimp habitat was determined for the entire area of pools that would be completely or partially disturbed by construction activities.

Indirect impacts are caused by construction activities, but occur later in time. These impacts may include alteration of pool and swale hydrology, erosion, human intrusion, increased sediment, and introduction of pesticides, predators and weedy non-native vegetation. Highways 149 and 99 are existing facilities that have transversed the project area for many years. A large area of vernal pool/swale complexes was excavated during the construction of SR 149 with little effect on the adjacent pools and swales. Currently, there are functioning vernal pools/swales located directly at the old cut line. Although there may be little effect from the proposed project except to those pools/swales directly impacted, indirect impacts were determined for all potential fairy and tadpole shrimp habitat within 76.5 m (250 ft) of the construction limits as suggested by the USFWS.

Bats:

Pre-construction surveys would be necessary to assess the presence of bats. Impacts could occur from disturbance of roosting sites such as bridges, buildings, trees, or rock cavities. Impacts could also occur due to disturbance of foraging habitat (streams, marshes). Should bats occur within the proposed project area, impacts would be avoided or minimized through use of work windows for construction and vegetation clearing. Bats can be excluded from structures and other suitable roost sites to avoid impacts. Suitable replacement roost sites can be incorporated in the design of new and replacement bridge structures to mitigate for loss of roost sites.

Butte County Meadowfoam (BCM): This special status plant could be directly impacted by cut, fill and grading work in vernal pools, which can alter the dimensions of pools and change inundation and duration characteristics.

Direct impacts were determined for entire pools containing BCM if the pool would be completely or partially disturbed by construction activities. Pools with BCM that are outside the construction limits may be indirectly impacted by construction through alterations in flow patterns, inundation and duration. As suggested by the USFWS, indirect impacts to BCM were determined for the area within 76.5 m (250 ft) of the construction limits. A summary of impacts to BCM is provided in the following table:

Table 3-9. Impacts to BCM

Alternative	Direct Impact Ha (ac)	Indirect Impact Ha (ac)	Total Ha (ac)
1. Widen South	0.16 (0.40)	0.02 (0.04)	0.18 (0.44)
2. Widen North	0.01 (0.03)	0.22 (0.54)	0.23 (0.57)
3. Avoid BCM	0	0.21 (0.53)	0.21 (0.53)

Source: Revised NES, Caltrans 2002

Alternatives 1 and 2 have the potential to directly impact and eliminate sub-populations of BCM, but would not threaten the continued existence of the remaining sub-populations. This would, however, reduce the overall population and result in a cumulative impact to the species. Alternative 1 would have the greatest direct impact to BCM. However, all impacts would be on the south side of SR 149, where the pools tend to have smaller population sizes and reduced reproduction potential. These sub-populations are also away from the core population of BCM on the north side of Openshaw Road.

Alternative 3 would avoid all direct impacts to BCM. It was developed at the request of resource agencies due to the importance of the species and the significance of the SR 149 population. BCM pools upstream of the construction limits for this alternative would not be affected by work lower in the watershed. Pools on the downstream side of the road would be outside the proposed disturbance area, and most pools would be far enough away from cut and fill that natural topography and hydrology would not be modified. Construction of this alternative would not alter the current flow patterns or ponding characteristics within individual pools.

Depauperate Milk Vetch: Direct impacts could result from cut and fill activities. All alternatives would impact two to three of the five populations. All alternatives would impact populations at the SR 99/149 interchange. Alternatives 1 and 3 would impact populations at the northern Schlaf access road and Alternative 1 would also impact a population at the Shippee Rd/ SR 149 intersection.

3.8.3 Mitigation

Cliff Swallows: In accordance with the Federal Migratory Bird Treaty Act and CDFG recommendations, a special provision in the construction contract would require either:

1. construction activities be scheduled to avoid the nesting period (March 15-July 31 or until young fledge), and/or
2. prevention of nest building on the bridge structures adjacent to proposed work prior to nesting season, according to protocol established by CDFG.

Tricolored Blackbird To avoid impacts to nesting birds, pre-construction surveys would be conducted to detect potential nesting sites. Sites would be monitored, and if any site became active prior to construction, a survey to study the impacts of the disturbance would need to be done. This would consist of observations as to whether or not the disturbance would cause the bird(s) to abandon the nest. If the disturbance would not cause abandonment, then construction could proceed. If construction would cause the bird to abandon the nest (while incubating or caring for fledglings), then construction in the vicinity would cease until all juvenile birds leave the nest.

If an unoccupied nest site is found, removal of the nest and surrounding habitat must occur outside of the species' breeding season, April 1 – September 1, and/or per guidelines established through coordination with the CDFG. Mitigation for removed nests would also be determined in consultation with CDFG.

Swainson's Hawk: The proposed project has the potential to impact 63.0 ha (155.7 ac) of Swainson's hawk nesting and foraging habitat. Under CDFG guidelines, losses of suitable foraging habitat within 10 mi of a nest site must be mitigated by protection or creation of equally suitable foraging habitat. If required, mitigation would be covered by the upland component of preservation of vernal pool fairy and tadpole shrimp habitat. This mitigation must be within a 10-mi radius of the impacted habitat. Minimization/mitigation measures would be coordinated with CDFG and incorporated into the final project design to reduce impacts. These measures would include, but are not limited to the following:

- Surveys would be conducted prior to the construction and/or the nesting season (whichever comes first) to detect any potential nesting sites. Identified sites would be monitored, and if any site became active prior to construction, a survey for potential impacts would be carried out. If construction would cause the bird to abandon the nest (while incubating or caring for fledglings), then construction would cease until all juvenile birds leave the nest.
- If an unoccupied nest site is found within the project area, removal of the nest tree (if required) must occur outside of the species breeding season (March 15 –

September 15), and/or per guidelines established through consultation with CDFG, and in accordance with the federal Migratory Bird Treaty Act.

Other Raptors in the orders of Falconiformes and Strigiformes: Mitigation measures established for the Swainson's hawk would also provide protection from direct and/or indirect impacts to other birds-of-prey including white-tailed kite and golden eagle. These mitigation measures would avoid or minimize impacts to these protected species.

Western Burrowing Owl: To avoid or minimize impacts, the following mitigation measures would be implemented:

- Pre-construction surveys would be conducted to detect any owls and/or potential nesting sites. Identified sites would be monitored, and if any site became active prior to construction, a survey for potential impacts would be carried out. If construction would cause the bird to abandon the nest (while incubating or caring for fledglings), then construction would cease until all juvenile birds leave the nest.
- If an unoccupied nest site is found within the project area, removal of the nest and surrounding habitat (soil), if required, must occur outside of the species' breeding season (February 1 – August 30), and/or per guidelines established through consultation with CDFG. (CDFG is the contact for this Species of Concern with oversight from USFWS).
- If an occupied or unoccupied nest were removed, appropriate mitigation would be undertaken to replace habitat at a ratio determined in consultation with CDFG and the USFWS.

Northwestern Pond Turtles: Impacts to pond turtles and their habitat would be avoided and minimized to the greatest extent practicable. Impacts from loss of 1.87 ha (4.61 ac) of freshwater marsh and other habitat occupied by the turtles would be compensated for as discussed under freshwater marsh mitigation (Section 3.6.3).

Prior to the start of any construction, the area would be surveyed for presence of pond turtles. If any were found, work would not begin until the turtle(s) is relocated to a suitable area outside the project limits. Measures to avoid and minimize impacts to northwestern pond turtles include:

1. A drainage system has been designed to maintain the water level of the freshwater marsh and beaver dam area, and prevent ponding and flooding of the roadway right-of-way. This system which includes a retaining wall and drainage system would be constructed adjacent to the new roadway minimizing the loss of pond turtle habitat. The cost of this drainage improvement is estimated to be \$1.5 million.
2. Grading and construction activities along Cottonwood Creek and associated freshwater marsh would be minimized between October 15 and May 1 to reduce impacts to hibernating turtles.
3. A minimum of two days prior to starting any construction work in ponded areas, water would be pumped or diverted from the work areas in a sequential manner allowing for the movement of turtles out from the work area.
4. Screens would be placed on intake pumps or as directed by the Resident Engineer to prevent harming pond turtles.
5. Caltrans biologists would be notified 10 days prior to the start of water diversion work and would be on site during this work. Pond turtles left in the work area would be relocated into adjacent downstream ponds.
6. The construction area (including water diversion/pumping activities) would be temporarily fenced to prevent pond turtles from moving back into the work area. Temporary fencing would be a small mesh fence, such as silt fence.

Western Spadefoot Toad: Impacts would be avoided or minimized by using construction windows limiting activities to the dry season. The compensation measures proposed for vernal pool fairy shrimp impacts would also mitigate for impacts to this species.

Salmonids and their Critical Habitat: The following protective measures would be utilized to avoid or minimize impacts to 0.89 ha (2.20 ac) of Chinook salmon habitat:

1. Restrict timing of in-stream activities. All in-water work would be conducted between June 1 and October 15, during the period when non-natal juvenile salmonids are unlikely to be present in the project area.
2. During construction, any stream flow would be diverted into culverts that would span the entire construction boundary. Culverts and roadway improvement would

be designed and constructed to allow fish passage at all sites within the project area.

3. Restore streamside and riparian habitat disturbed by construction. Prior to vegetation removal, the area of impact would be surveyed by a qualified biologist for a complete assessment of all species present and their relative quantities. Riparian vegetation would be cut by hand (where applicable) to ground level in temporary use areas to allow for re-growth following construction. After construction, compensation for the lost and disturbed riparian vegetation would occur on-site and in-kind at a ratio to be determined by consultation with the CDFG and other appropriate agencies to ensure “no net loss” of riparian habitat. Restoration areas would be planted with native plants of the same species that were affected or removed during construction. The banks of the disturbed channels would be restored and re-graded to maximize the growth of riparian vegetation. The upland areas would be restored and re-graded to slow the overland flow of rainwater and provide a variety of hydrologic conditions.
4. Riparian vegetation restoration efforts would be monitored annually by a qualified biologist for 5 years after construction is complete. Success would be achieved if there were a minimum of 50% vegetation survival by the third year and a stable viable population for the remainder of the monitoring period. If the performance standards were not met, remedial measures, such as replanting, would be implemented.
5. Minimize disturbance to creek channel and adjacent areas. Disruption of the streambed and bank, and adjacent riparian corridor would be minimized. All areas outside of and adjacent to the construction limits would be designated as Environmentally Sensitive Areas (ESAs) and would be fenced to prevent disturbance of these areas. Disturbed areas would be graded and temporary erosion control methods employed to prevent surface erosion and siltation of the waterways. BMPs would be utilized to prevent contamination of stream- side soil and adjacent waters from construction material and debris. Stream banks and adjacent areas would be permanently stabilized after construction to avoid increased erosion during subsequent storms and associated runoff. BMPs would include temporary erosion control, temporary and permanent soil stabilization, wind erosion and dust control, and stream sediment control.

Valley Elderberry Longhorn Beetle: Mitigation for impacts to 22 elderberry shrubs (119 stems) would follow Federal guidelines for avoidance and establishment,

restoration and maintenance of buffer zones. It would cover transplanting shrubs and replacement planting and monitoring. Caltrans would re-survey the shrubs in the study area following established survey guidelines. Mitigation requirements would then be determined based on shrub location, stem size and presence of exit holes.

Reasonable and prudent measures as recommended in the USFWS Conservation Guidelines for Valley Elderberry Longhorn Beetle would be utilized to avoid and minimize impacts on VELB and their habitat. These measures include:

1. Minimized construction footprint to minimize loss of elderberry shrubs.
2. Designate all areas outside the construction limits as environmentally sensitive areas (ESA). ESA information would be on contract plans and presented in the Special Provisions. Temporary fencing to mark the boundaries of the ESAs would be placed as the first order of work and prior to any vegetation removal (including transplanting of elderberry shrubs). There would be no disturbance or encroachment upon the ESA.
3. Educate Construction employees on the identification and location of elderberry shrubs and the VELB.
4. Incorporate standard BMPs for dust control and to ensure that topography and drainage patterns near shrubs are not altered
5. Ensure success of compensation plantings of elderberry shrubs and associated native plants.

Impacts to VELB would be mitigated according to the compensation recommendations in the USFWS Guidelines. Based on previous survey data, an estimate of mitigation credits needed is presented in the following table:

Table 3-10. VELB Mitigation

	Direct Impact		Credits
Alternative	Number of Shrubs	Number of Stems	5 stems per credit
3- Avoid BCM	22	119	24

Mitigation would include payment for 24 credits to the USFWS “VELB” fund, replacement planting and transplanting shrubs. Caltrans and FHWA are investigating all mitigation options available, including several large parcels in the general vicinity of the project, for replacement planting and transplanting.

Vernal Pool Fairy Shrimp and Tadpole Shrimp Habitat: Mitigation for loss of vernal pool Fairy Shrimp and Tadpole Shrimp habitat due to either direct and/or indirect impacts would consist of both preservation and creation components. Mitigation would ensure “no net loss” of habitat for all concerned vernal pool species. The following mitigation has been determined through consultation with the USFWS:

Preservation (2:1 ratio): Preserve 37.5 ha (92.7 ac) of habitat by purchase of credits at a USFWS-approved mitigation bank, or purchase a conservation easement at a 3:1 ratio [56.2 ha (138.9 ac)] on USFWS-approved conservation land;

Creation (1:1 ratio): Create 11.87 ha (29.33 ac) of habitat through payment for creation at USACOE-approved mitigation site.

The HMMP, reviewed and approved by USFWS, USACOE and USEPA, identifies the mitigation area(s), the method for preservation, and the long term maintenance and conservator. For the created habitat, the plan provides the implementation schedule, site preparation, planting plan, establishment techniques, maintenance plans, performance criteria, commitments for monitoring, and remedial actions if performance criteria are not met.

Engineering and Construction related measures to reduce impacts would include:

1. Final design would strive to avoid or minimize impacts to resources in the right-of-way. This would include increasing slope angles and/or reducing fill.
2. Restricting work in the areas of vernal pools and swales to the roadway side of cut and fill. This would avoid temporary construction impacts outside the edge of cut or toe of fill.
3. Restricting work in vernal pools and swales to the period when the pools are dry.
4. Maintaining the existing topography and drainage pattern outside the limits of cut and fill.
5. Maintaining existing hydrologic connections and flow patterns between the north and south sides of the road.

6. Designating the limits of cut and fill slopes as Environmentally Sensitive Areas (ESAs) to be avoided by work. The limits of the work area/ESA would be fenced with orange mesh fencing as a visual and physical barrier to protect the resources during the construction period.

Bats

Should bats be found within the project area, impacts would be avoided or minimized by any or all of the following:

- Construction work windows would allow work within specified areas when bats would not be present
- Pre-construction vegetation removal would restrict or eliminate potential roosting habitat
- Bats would be excluded from occupying structures that would be upgraded, and from other suitable roost sites.

Loss of bat foraging habitat would be mitigated within oak woodland, riparian and/or wetland mitigation areas at a ratio to ensure “no net loss” of habitat.

If necessary, suitable replacement roost sites could be incorporated in the design of new and replacement bridge structures.

Butte County Meadowfoam:

Alternative 3 would not result in direct impacts to BCM. Mitigation for indirect effects to 0.21 ha (0.53 ac) of habitat would be mitigated at a 5:1 ratio for a total of 1.1 ha (2.7 ac). This mitigation would be in the form of a contribution toward a multi-agency purchase of property containing an established population of BCM. The USFWS, USEPA and CDFG have approved this mitigation.

Depauperate Milk Vetch: Since these plants are believed to be “too widespread or not threatened at this time” (CNPS List 4) and since they have no state or federal protected status, there is no requirement for mitigation. However, Caltrans would take all reasonable actions to prevent impacts to these species:

1. Roadwork would be avoided or minimized in the areas containing these species.
2. In the spring prior to the scheduled start of work, limits of populations would be delineated with stakes.
3. Populations outside the delineated work area would be designated as ESAs on contract plans, and staked and flagged in the field.

The following table presents a summary of proposed mitigation for impacts to special status species:

Table 3-11. Summary of Mitigation for Special Status Species

Resource Impacted	Type of Mitigation
Cliff Swallows	Construction Measures, work windows
Tricolored Blackbird	Construction Measures, work windows
Swainson's Hawk & Other Raptors	Construction measures, work windows, protection or creation of habitat
Western Burrowing Owl	Construction measures, work windows, replacement of habitat
Pond Turtles	Construction measures, work windows, replacement of habitat,
Western Spadefoot Toad	Covered under vernal pool species mitigation
Steelhead/Salmon	Construction Measures, work windows, restore habitat
VELB	Construction measures, contribution to USFWS VELB fund, transplant & replacement plantings
Vernal Pool listed shrimp species	Construction measures; preservation and creation of habitat
Bats	construction measures, work windows
BCM (indirect impacts)	Construction measures, preserve existing population
Depauperate Milk Vetch	Avoidance and construction measures

3.9 Floodplain

Executive Order 11988 for Floodplain Management directs federal agencies to refrain from conducting, supporting, or allowing an action in a floodplain unless it is the only practicable alternative. The FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A. An encroachment into a floodplain is defined as “an action within the limits of the 100-year floodplain,” with the 100-year floodplain being defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” The National Flood Insurance Program (NFIP) produces maps that identify 100-year flood areas based on local hydrology, topology, precipitation, flood protection measures and other scientific data. This program is administered by the Federal Emergency Management Agency (FEMA).

3.9.1 Affected Environment

Within the proposed project limits, FEMA-mapped 100-year floodplains are present where SR 149 crosses Dry and Clear Creeks (Figure 3-4A, Zone A), and where SR 99 crosses Little Dry Creek (Figure 3-4B, Zone A). This information is depicted on Flood Insurance Rate Maps (FIRM) for Butte County (Panel Numbers 06007C0540C, and 06007C0760C).

3.9.2 Impacts

New bridges would be constructed at Dry Creek and Clear Creek on SR 149 to accommodate two new lanes of traffic, at Little Dry Creek on the west side of SR 99 as a component of a new driveway access road, and at Gold Run Creek on SR 70 north of SR 149. According to a Caltrans Floodplain Hydraulic Study dated 2/9/99, this construction would constitute a transverse encroachment into the 100-year floodplain at the Dry Creek, Clear Creek and Little Dry Creek locations. Impacts would be similar for all build alternatives. Temporary encroachments would consist of falsework to accommodate bridge construction, and permanent encroachments would occur where new piers are placed for the new Dry and Clear Creek bridges. In compliance with 23 CFR 650.111, the following information is offered regarding these encroachments:

- The proposed action would not constitute a significant encroachment as defined in 23 CFR 650.105.
- The proposed action would not support incompatible floodplain development.
- Impacts on natural and beneficial floodplain values would consist of temporary loss of riparian vegetation due to excavation for piers and abutments.
- Restoration and preservation of the natural and beneficial floodplain values would be included in replanting efforts to mitigate loss of riparian vegetation due to construction activities.
- Measures to minimize floodplain impacts would consist of designing the new piers for minimum head loss and placing them in line with the piers of the existing bridges. This would minimize the effect on the base flood water surface elevation at each encroachment location.

Figure 3-4. Floodplain Areas

3.9.3 Mitigation

None required.

3.10 Land Use

3.10.1 Affected Environment

Butte County is located in the northeast part of the Sacramento Valley, and is divided into two topographical sections: a valley area to the west and a foothill/mountain area to the east. The proposed project is located in a rural area on the eastern edge of the valley between the cities of Oroville and Chico, and land within this area is primarily used for grazing and irrigated crops (Figure 3-5). There are scattered rural residences throughout the area, with larger residential areas occurring to the south within the Oroville City limits, along SR 162, and Nelson Avenue. Large agricultural areas occur along SR 99 between Dry Creek and SR 162 and along SR 70 north of the SR 70/149 intersection.

The proposed project is subject to the land use designations in the Butte County General Plan. The Circulation Element of this plan states that new road construction in agricultural areas will occur only to support the area's agricultural economy, or to improve capacity of highways that serve a countywide and regional interest. Improvements in the SR 70/149/99 corridor have been in the Butte County RTP (Regional Transportation Plan) since 1990 and the RTIP (Regional Transportation Improvement Program) since 1992. These documents recommend the SR 70 corridor as the freeway link from Sacramento to Chico, and the proposed project is within this corridor. The highway improvements would connect Butte County to the national interstate system.

Land use designation within the project area is grazing/open land with a 40 ac minimum parcel size (along SR 149), and orchard/field crop with a 5 ac minimum parcel size (along SRs 70 and 99). There are also two areas designated as agricultural residential (1-40 ac per unit), one being along Shippee Road between SR 149 and 99 and the other on the north side of SR 149, between Gold Run Creek and the SR 70/149 intersection.

Figure 3-5. Land Use

3.10.2 Impacts

The proposed project would require the acquisition of approximately 118 ha (292 ac) of land adjacent to SRs 70, 149 and 99. This would consist of strips of land adjacent to the existing alignment, and areas needed for construction of interchanges and driveway access roads. This acquisition would change land use from the current open space, residential and farmland to highway use. (A discussion of farmland impacts is provided in Section 3.11.2).

The proposed project is consistent with the Circulation Element of the Butte County General Plan, which recommends improvements to SR 149 to address traffic demand and safety. The project is also consistent with BCAG's Regional Transportation Plan, which lists the SR 149 Highway Improvement project as a high priority. The proposed project is intended to meet the traffic needs in the area based upon the local land use plans.

3.10.3 Mitigation

None required.

3.11 Farmland

3.11.1 Affected Environment

Agricultural lands (row crops, rice fields and orchards) are present throughout the proposed project area. Olive orchards occur on both sides of SR 70 just north of the junction with SR 149. Fruit orchards are found along the south side of SR 149 on both sides of Shippee Road, and along SR 99 between Dry Creek and Cottonwood Road. Row crops occur on the south side of SR 149 west of Dry Creek and along the west side of SR 99 between Durham/Pentz Road and SR 149. Rice fields are found along the west side of SR 99 north of SR 149. Grazing land is present on both sides of SR 149, on the west side of SR 70 north of the SR 149 intersection, and intermittently throughout the remainder of the project area.

Butte County actively participates in the California Land Conservation (Williamson) Act program of 1965 (Gov't Code Section 51291). This program encourages landowners to work with local governments in order to protect important agricultural land and open-space. Landowners can enroll parcels for a minimum of 20 years; land

is assessed for property taxes at a rate consistent with the actual use rather than the potential value of the land. Williamson Act lands are classified as prime or non-prime based on evaluation by the Natural Resources Conservation Service (NRCS). Non-prime land is usually grazing and rangeland. Within the project area, 24 parcels of land [90 ha (223 ac)] are currently under Williamson contracts (Figure 3-6).

3.11.2 Impacts

The project would require the acquisition of approximately 118 ha (292 ac) of land. In accordance with the Farmland Protection Policy Act (FPPA) of 1984, Caltrans initiated coordination with the NRCS and submitted the site assessment criteria of the Farmland Conversion Impact Rating Form (Figure 3-7). This form provides a number rating based on land evaluation and site assessment criteria. The NRCS determined that a total of approximately 1.2 ha (3 ac) of land proposed for acquisition in two locations along SR 149 (one near Shippee Rd. and the other approximately 0.5 mi east of Cottonwood Creek) have the potential to be designated Prime Farmland (Figure 3-8). This determination cannot be confirmed at this time, as the NRCS has not completed a soil survey for the project area. The overall farmland impact rating was low, and as such the project impacts to farmland (similar for all build alternatives) are considered to be minor. The potential for cumulative impacts to agricultural land is addressed in Chapter 4.

The project would acquire approximately 90 ha (223 ac) of land from 24 parcels that are under Williamson Act contracts (Figure 3-6). Total amount of land covered by the 24 parcels is approximately 1905 ha (4707 ac). Impacts from the proposed project would be similar for all build alternatives, and would affect approximately 4.7% of Williamson Act land in the project area. Although state highway projects are generally exempt under Section 51293 from the provisions of this act, Caltrans notified the Director of the California Department of Conservation, as required, of the possible acquisition of Williamson Act contracted land (Appendix A). No comments on this notification were received; however, comments were received on the Notice of Preparation (NOP) for the DEIS/DEIR.

3.11.3 Mitigation

No mitigation is required.

Figure 3-6. Williamson Act Parcels

Figure 3-7. Farmland Impact Form

Figure 3-8. Potential Prime Farmland

3.12 Social and Economic

3.12.1 Affected Environment

State Route 149 is located in a rural area between the cities of Oroville and Chico, and is the major access route between these two urbanized areas. This two-lane conventional highway serves as a diagonal link between the SR 70 freeway to the southeast, and the SR 99 expressway to the northwest, and facilitates the movement of people, goods and services in the area.

Residential Property and Businesses

There are scattered rural residences within the project limits, but no concentrated residential or commercial areas. Residential parcels along SR 70 north of SR 149 and near a catfish farm on the east side of SR 99 just north of SR 149 could be affected by the proposed project. Five businesses located within the project limits could be affected by the proposed project: a catfish farm on the east side of SR 99 just north of the intersection with SR 149, the Book Family Farm on the west side of SR 99 just north of the SR 149 intersection, a strawberry farm on the south side of SR 149 west of Shippee Road, and two businesses on residential parcels on the west side of SR 70 north of SR 149.

Environmental Justice

Executive Order 12898 regarding Environmental Justice requires identifying and addressing, as appropriate, any disproportionately high and adverse human health or environmental effects of federal programs, policies and activities on minority (Black, Hispanic, Asian American, American Indian, or Alaskan Native) and/or low-income (household income at or below the Dept. of Health and Human Services poverty guidelines) populations. No minority or low-income populations have been identified within the project limits; therefore there would be no impact to these groups.

Pedestrian and Bicycle Facilities

Pedestrians and cyclists are currently allowed to use the SR 70, 149, and 99 roadway shoulders, though there are no official bicycle/pedestrian designations.

Utilities

Two sets of PG&E high transmission [500 kilovolt (kv) & 230 kv] electrical lines cross SR 149 near Shippee Road. Two Western Area Power Administration (WAPA) towers are present on the west side and one on the east side of SR 70, north of SR 149. PG&E 60/12 kv power lines are present along SR 70 near Table Mtn. Blvd and a PG&E 60 kv line and a gas transmission line are located at the SR 99/149 intersection. Pacific Bell fiberoptic and telephone lines are present along SR 149, 70 and 99.

3.12.2 Impacts

Right-of-way acquisition would consist of strips of land adjacent to the existing alignment, and areas needed for construction of interchanges and driveway access roads. The following impacts to houses/businesses would be similar for all build alternatives. There is no known controversy regarding these acquisitions; the Caltrans Right-of-Way staff has been in contact with affected property owners, who are fully aware of the proposed project.

Residential

Two residential parcels on the west side of SR 70 north of the SR 149 intersection would be acquired to accommodate the realignment of SR 70. Each of these parcels contains two residences (four total). Two other residences are located adjacent to the catfish farm north of the SR 99/149 intersection. Depending on the amount of property acquired from the fish farm, these residences may be affected.

Business

- Construction of the SR 99/149 interchange would require either partial or full acquisition of the property containing the catfish farm in the northeast quadrant of the SR 99/149 intersection. Current access to this business is directly from SR 99; this access would require relocation, as access along SR 99 would be limited to designated points. Depending on negotiations with the property owner, the parcel may be fully acquired, which would result in relocation of the business.
- A strawberry farm on the south side of SR 149 west of Shippee Road would be relocated to accommodate roadway widening and the SR 99/149 interchange ramps.

- Currently, access to the Book Family Farm on the west side of SR 99 north of the SR 99/149 intersection is available directly from SR 99. This access would be closed, and future access would be provided through construction of a frontage road from the Book property north to the intersection of Durham/Dayton Highway and SR 149. Access to the Book Farm would be maintained during the construction period.
- One of the residential parcels that would be acquired on the west side of SR 70 north of SR 149 contains a construction/agriculture business, and the other parcel contains a small cattle operation. These businesses would be relocated to accommodate the SR 70 realignment.

Pedestrian and Bicycle Facilities

As the proposed project is currently designed, pedestrian and bicycle access would not be maintained along SR 149, due to the closed access nature of the interchanges and SR 149 roadway. Bicycle access would still be available between Oroville and Chico along the following route:

- Table Mountain Blvd. to former SR 70 (to be converted to a county road) to SR 191 to Durham-Pentz Road to SR 99

In addition, bicycle access would still be available on Routes 99 and 70.

Traffic

All Build Alternatives would result in improved traffic flow along SR 149 due to reduced congestion and fewer accidents. This would be a beneficial impact in the area.

Public/Emergency Services

The proposed project would have a beneficial impact on fire protection, law enforcement, emergency and other public services by improving safety and response time along SR 149. The No-Build Alternative would likely have negative impacts on these services, since congestion and safety concerns would not be improved.

Utilities

One support tower associated with the two sets of PG&E high transmission (500 kv) electrical lines near Shippee Road would require relocation outside the proposed right-of-way. The PG&E 60/12 kv power lines and gas transmission line would also be relocated, as well as portions of the Pacific Bell fiber-optic and telephone lines. The two WAPA towers on the west side of existing SR 70 would be eliminated, and would be replaced by three towers. One additional tower would be constructed on the east side of SR 70. This work is necessary to accommodate the realignment of SR 70 and construction of the SR 70/149 interchange. Impacts associated with this work would consist of removal of existing vegetation, and would be similar for all build alternatives. As with all Caltrans projects, the Department would coordinate closely with the utility companies to ensure minimum disruption of service to customers in the project area.

3.12.3 Compensation

Property owners would be compensated the fair market value for any land or improvements acquired by the State. Caltrans and FHWA would provide relocation assistance in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Appendix I).

Relocation resources are available to all residential and business relocates without discrimination. These issues would be handled during the right-of-way negotiations phase of the project. Access to businesses and residences would be maintained throughout the construction period.

Removal of existing vegetation as a result of utility relocation would be addressed under Caltrans' Standard BMPs for erosion and water quality.

3.13 Traffic and Transportation

3.13.1 Affected Environment

State Route 149 is an undivided two-lane rural highway, 7.4 km (4.6 mi) in length, with 3.6 m (12 ft) lanes and 2.4 m (8 ft) outside shoulders. It is a connecting link between the four-lane SR 70 freeway north of Oroville and the four-lane SR 99 expressway south of Chico. It serves inter-regional and local commuter traffic (*Caltrans 2000*). Passing movements occur in the opposing traffic stream; therefore as traffic volumes increase, opportunities for passing decrease. Current operating characteristics are rated at LOS C.

The major traffic pattern on SR 149 is from Oroville to Chico and vice versa. This highway serves as a diagonal link between the SR 70 freeway and SR 99 expressway, and is the only remaining two-lane section of State highway along the corridor between Oroville and Chico. The 4.6 mi Route 149 section limits capacity, as traffic must transition from the four-lane divided freeway/expressway of Routes 70 and 99 to the undivided two-lane SR 149 highway (Figure 1-2). Traffic projections indicate SR 149 will not accommodate future demand at the accepted route LOS C, and in fact, the LOS is projected to drop to E by the year 2020.

As stated in Chapter 1, safety concerns exist throughout the SR 70/149/99 corridor due to at-grade intersections and driveways. SR 70 south of SR 149 is a four-lane freeway, and SR 99 north of SR 149 is a four-lane expressway. Vehicles entering SR 149 from these two facilities often encounter stopped traffic as vehicles wait for a break in through traffic to turn onto Route 149, a local road, or a driveway. The SR 70/149 and 99/149 intersections currently have accident rates well above the statewide average (Table 1-4).

The following public transit options are available along SR 149:

- Public transit service is provided by Butte County Transit, with eighteen round trips provided daily between Chico and Oroville via SR 149.
- Greyhound bus Lines operates four round-trip buses per day between Sacramento and Chico via SR 149, with a capacity of 47-54 passengers per vehicle.
- Amtrak Motor Coach operates three round-trip buses per day between Sacramento and Chico via SR 149, with a capacity of 44 passengers per vehicle.

Pedestrians and cyclists are currently allowed to use the SR 70, 149, and 99 roadway shoulders, though there are no official bicycle/pedestrian designations.

3.13.2 Impacts

The proposed project would result in improved traffic flow (LOS B or better) along SR 149 due to reduced congestion. Accident rates would be reduced with construction of the SR 70/149 and 99/149 interchanges. These would be beneficial impacts to local and regional traffic, and would improve the movement of goods and services in the area.

As the proposed project is currently designed, pedestrian and bicycle access would not be maintained along SR 149, due to the closed access nature of the interchanges and SR 149 roadway. Access would still be available between Oroville and Chico along the following route, which is identified in the Butte County Bicycle Plan:

- Table Mountain Blvd. to former SR 70 (to be converted to a county road) to SR 191 to Durham-Pentz Road to SR 99

In addition, bicycle access would still be available on Routes 70 and 99.

3.13.3 Mitigation

None required.

3.14 Visual

3.14.1 Affected Environment

Many elements of the landscape visible from the project area are the product of one of several periods of increased volcanic activity common along the West Coast of North America. Basalt rock outcrops, buttes and volcanic soils, which are common throughout the region, are remnants of an active volcanic period that occurred over 1 ½ million years ago. Rivers and streams have modified the landscape by collecting soil materials in the higher foothills, buttes and volcanic outcrops and then depositing these materials to the valley floor where the flat topography slows the water flow and allows for sediment deposition.

The visual character of much of the area is predominantly a natural landscape of rolling grasslands. The foothills and buttes visible to the north and east feed three main creeks that intercept SR 149. To the east, Gold Run Creek drains from South Table Mountain, and both Clear and Dry Creeks drain from the foothills to the north. Numerous vernal pools and swales are present in the project area, and they support seasonal wetland vegetation and organisms. A good example of the vernal pool and swale landscape is found on the north side of SR 149 between the bridge over Clear Creek and the SR 99 intersection.

Clay rich soils in the project area prevent water infiltration, resulting in water ponding in some of the lower spots on the landscape and creation of wetland conditions. State Route 149 crosses this type of wetlands near the intersection with SR 70.

3.14.2 Impacts

The proposed interchanges would provide three levels of roadway at the SR 70/149 and 99/149 intersections. This would place the highest overpass at approximately 17 m (56 ft) above the ground. Existing views of the foothills to the east would be partially blocked by these new structures. The overpass structures at the SR 70/149 intersection would block western and northwestern views of the middle ground and background for residents north of the intersection. Regional views from the orchard to the north of this intersection would also be impacted by the overpass structures. Views of the Campbell Hills from the orchard may be lost. Interchange structures at the SR 99/149 intersection would impact views in a similar manner, though not as extensively. A small butte to the west of this intersection would help the structures blend in with the background.

Views from the overpasses would also provide a positive visual experience for the traveling public. These structures would provide a better view of the region, which includes some of the more identifiable landscape elements such as the Sutter Buttes, Campbell Hills and the Central Coast Range.

West of the SR 70/149 intersection, SR 149 cuts through a section of rolling hills adjacent to the roadway. Slopes on both sides of the highway currently block views of the middle ground and background to the north and south. Widening of the roadway would reduce the tunnel effect for the driving public, and may improve views in this area. Visual impacts along the remainder of SR 149 would mainly involve loss of vegetation.

3.14.3 Mitigation

Impacts to the visual character of the project area would be mitigated by the following measures:

- Slopes along the interchange ramps would be constructed at a 2:1 slope or flatter when possible to allow blending with the surrounding landscape.
- Slopes of the interchange ramps would be planted with native vegetation (including grasses, trees and shrubs).
- Revegetation with native species would occur in disturbed areas throughout the project area.

3.15 Historic and Archaeological Preservation

Federal regulations for historic properties are governed primarily by Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended). Section 106 requires federal agencies to take into account the effects of their actions on historic properties, and provides the Advisory Council on Historic Preservation the opportunity to comment on such actions. For compliance with NEPA, the FHWA follows the Council's implementing procedures contained in 36 Code of Federal Regulations (CFR) Part 800. Historic and archaeological resource studies performed pursuant to these statutes are documented in a Historic Property Survey Report (HPSR) prepared by Caltrans. For compliance with CEQA, the State Historic Preservation Office (SHPO) must provide concurrence with Caltrans findings regarding project impacts.

3.15.1 Affected Environment

The Area of Potential Effects (APE), approved by the Federal Highway Administration (FHWA) and the State Historic Preservation Officer (SHPO) for this project, involves approximately 362 ha (895 ac) of land. Four Caltrans archaeologists with a combined experience of over 100 years in prehistoric and historic archaeology, and an architectural historian conducted an intensive pedestrian archaeological and historic architectural survey of the APE and adjacent lands. This survey resulted in the identification of a number of cultural resources. These resources include:

- The Berkeley Olive Association Historic District;
- Fifteen bridges; nine within and six adjacent to the APE;
- Nine architectural properties constructed prior to 1954;
- Eleven architectural properties constructed after 1954;
- Six historic-era properties:
 - Wick Ranch (CA-BUT-1277H, outside the APE)
 - Gold Run Creek Homestead (outside the APE)
 - Dry Creek Tailings (outside the APE)
 - Cherokee Mine Levee (outside the APE)
 - World War II Practice Landing Field
 - Berkeley Olive Association Camp (outside the APE)

The SHPO has concurred with FHWA's determination that the Berkeley Olive Association Historic District is eligible for the National Register of Historic Places. This resource is also historical for the purposes of CEQA. All of the bridges and architectural properties, the World War II Landing Field and the Berkeley Olive

Association Camp were determined not eligible for the National Register by consensus of FHWA and the SHPO and are not historical resources for the purposes of CEQA. The Wick Ranch, Gold Run Creek Homestead, Dry Creek Tailings and Cherokee Mine Levee are located outside the APE. In consultation with the SHPO, these resources have not been formally evaluated for eligibility, as they would not be affected by project construction (*Caesar 2000*). Concurrence letters from the SHPO regarding determinations of eligibility and effect may be found in Appendix A.

3.15.2 Impacts

Historic properties, which include archaeological resources, are those that are listed on or eligible for listing on the National Register of Historic Places. Resources that are historical for the purposes of CEQA meet criteria outlined in the CEQA Guidelines and Section 5024.1 of the California Public Resources Code. Adverse impacts can occur if these resources are removed, damaged or have their value diminished. Caltrans prepared a Historic Property Survey Report (HPSR) that discusses in detail the potential impacts of the proposed project.

Properties eligible for the National Register of Historic Places/Historical resources for the purposes of CEQA

The Berkeley Olive Association Historic District would not be affected because the proposed project has been designed to avoid this historic property, which is outside the APE. The SHPO has concurred with this finding (Appendix A).

Properties not eligible for the National Register/Resources not historical for the purposes of CEQA

- All of the bridges and architectural properties, as well as the World War II Landing Field and the Berkeley Olive Association Camp were found not eligible for the National Register and are not historical resources for the purposes of CEQA. Under regulations set forth in Section 106 of the National Historic Preservation Act and CEQA, no further consideration of these resources is required.

Other properties

The Gold Run Creek Homestead, Dry Creek Tailings, Wick Ranch and Cherokee Mine Levee are outside the APE for the proposed project.

The SHPO has concurred that no historic properties would be affected by the proposed project (Appendix A).

3.15.3 Mitigation

No mitigation is required. However, the Gold Run Creek Homestead, Dry Creek Tailings and Cherokee Mine levee would be designated as Environmentally Sensitive Areas (ESAs) on project plans to ensure their protection during construction.

If buried archaeological materials are encountered during construction, it is Caltrans' policy that work temporarily cease in the area of the find until a qualified archaeologist can evaluate the nature and significance of the materials and consult with the State Historic Preservation Officer about disposition of the materials (*Environmental Handbook*, Vol. 2, Chapter 1). In the event that human remains are discovered or recognized during construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the appropriate county coroner has determined that the remains are not subject to provisions of Section 27491 of the Government Code. If the coroner determines the remains to be Native American, he shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC will appoint a Most Likely Descendent for disposition of the remains (Health and Safety Code Sect. 7050.5, Public Resources Code Sect. 5097.24).

3.16 Growth Inducement

NEPA and CEQA guidelines require discussion of the potential growth-inducing impacts of a proposed project. Growth inducement in terms of transportation projects can be defined as the relationship between the proposed project and growth within the project area. This relationship is often difficult to quantify accurately since the growth that happens after the project is constructed is usually indirect and occurs over a period of time. The relationship is often regarded as either one of facilitating planned growth or inducing unplanned growth.

As a result of the NEPA/404 Integration Process followed for the proposed project, Caltrans agreed to study the potential for growth inducing effects from the proposed SR 70/149/99/191 and two other transportation projects, Sutter/Yuba 70 Upgrade and Marysville Bypass, in the adjacent counties of Sutter and Yuba along the SR 70 corridor from Sacramento to Chico. A detailed discussion is available in the SR 70

Growth Inducement Report (*Caltrans 2000*). Additional discussion may be found in the following sections of Appendix B, Comments Received on Draft EIS/EIR: Responses to EPA, #s 1-10; Responses to DFG, # 14; Responses to Butte Environmental Council, #s 8-10.

Projects may induce growth by:

- removing obstacles to growth, such as land use designation,
- stressing existing facilities/services to the extent that new ones are required,
- encroaching on a previously isolated open space,
- fostering economic expansion.

Caltrans projects are designed to accommodate existing traffic and traffic projected to be generated by growth planned in accordance with local and regional plans and policies, as required by State and federal laws and regulations. As a result, local governments determine the extent of desired growth, and then, subject to available resources and in cooperation with local and private entities, Caltrans may provide transportation facilities and services needed to accommodate such growth (*Caltrans 2000*). However, this is not to say that State highway projects are never growth inducing. It is important to determine the cause of growth. If the improvements are only a reaction to planned growth trends, then the project is growth accommodating. If the project is the impetus to extensive, unplanned growth, then the project is growth inducing. Whether or not a project would induce unplanned growth depends on many factors such as economic, social, physical, and political.

The proposed SR 70/149/99/191 in Butte County is a gap-closure between the four-lane SR 70 freeway to the southeast and the four-lane SR 99 expressway to the northwest. It is intended to address existing safety issues, existing traffic demand, and traffic demand projected for the next twenty years. Table 1-2 presents existing traffic demand in the proposed project area and the 20-year predicted demand.

Currently, SR 149 is operating at a LOS C (Table 1-1). From the predicted traffic demand shown in Table 1-2, the existing highway cannot be expected to maintain this LOS in the future, and in fact is expected to drop to an unacceptable LOS E without improvements.

The SR 70/149 and 99/149 interchanges are access controlled, freeway-to-freeway design, with no access allowed on or off the highway system. This lack of access would limit the potential for development in the area. Four freeway-to-freeway interchanges in similar rural settings in California (I-5/I-505, I-5/SR 138, I-5/I-580, and I-5/I-205) have not experienced extensive development. Based on the predicted traffic demand and the controlled access nature of the proposed facility, the proposed project should be considered growth accommodating. In addition, the forthcoming Butte County HCP is intended to address indirect effects from the proposed and other projects in the county.

The SR 70 Sacramento to Chico Corridor improvements would increase the State Highway System capacity within these areas, with the intent of improving inter-regional travel. The Butte County Association of Governments (BCAG) and the Sacramento Area Council of Governments (SACOG) have determined that, given the current and projected growth in the Northern Sacramento Valley, it is necessary to provide a freeway to serve the Chico, Oroville, Marysville and Yuba City areas that are currently not linked to the State freeway system. The proposed project is one of several highway improvements proposed to improve mobility and the movement of goods and services in this corridor. The cities of Chico, Oroville, Marysville, and Yuba City and the land bordering the current facilities have highway access to the major developed centers in the region, most notably the Greater Sacramento area. Future development expected in this region has already been planned, and would occur regardless of capacity additions to the State Highway System (SHS). The following table presents population predictions for Butte, Sutter, and Yuba Counties:

Table 3-12. Population Projections by County

(Numbers rounded to nearest hundred)

County	2000	2010	2020	Increase from 2000 to 2020	% change 2000 to 2020
Butte	203,200	244,000	293,500	90,300	44.4
Sutter	78,500	98,400	121,600	43,100	54.9
Yuba	61,500	78,000	97,600	36,100	58.7

Source: BCAG, SACOG, 2001

These numbers indicate steady population growth in the three counties regardless of highway improvements. The majority of growth is planned for Specific Plan areas (Figure 4-2). Growth in Sutter County along SR 70 is constrained primarily by public

opinion with respect to housing in this agricultural area (*Caltrans 2001*). County residents through referendums turned down two proposed developments. There are many growth-restricting factors in Butte County. There are a considerable number of acres zoned agriculture in the region, nearly twice as many as all other zoned types combined. The County has set policies to restrict developing agriculture land, and to direct development to existing urban areas, further protecting the land in the corridor from development. The burden of mitigating traffic, road costs, and providing public services also would force development toward existing urban areas. There are many special status species in the County and at least two confirmed in the area that must be addressed before development occurs.

The area within the SR 70 Sacramento to Chico corridor that has the greatest potential for growth is in Yuba County, which currently is working on establishing infrastructure for the Plumas Lake Specific Plan. This plan allows for orderly development within the area that can move forward, depending on economic recovery, regardless of the status of the corridor improvements. Some of the later phases of the development are contingent upon access and transportation opportunities that the Sutter/Yuba 70 improvements would provide. However, it is not anticipated that the influx of development would exceed that which is projected in the local general plans.

The various General Plans in the region (Butte, Sutter and Yuba counties) have also made declarations towards protecting the environment. Each county has multiple endangered or threatened species that must be protected to ensure their survival, and other environmental concerns that restrict development including: state flood easements (Yuba County), habitat conservation easements (Yuba County, Butte County, and District 10/Honcut Creek Area), designated wildlife areas (Table Mountain, Oroville, and Marysville), major floodplains (Feather River, Yuba River, and Bear River), and perpetual conservation easements (City of Chico). These areas would likely remain in their existing forms because they limit incompatible land uses such as development.

The SR 70 Sacramento to Chico Corridor improvements will increase capacity and make travel in the region quicker, achieving inter-regional transportation goals, but they would not be the deciding factor for development. Many factors are required for extensive growth to occur, including increased economic activity, re-zoning, environmental conditions and altering the public attitude toward development. The

proposed projects would not connect new regions to the State Highway System since all of the areas already have access.

Project-induced growth is not expected as a result of the proposed SR 149 highway widening due to the rural nature of the project area, lack of infrastructure, environmental constraints, General Plans that focus growth in the Greater Oroville and Chico urban areas, and the forthcoming Butte County HCP. Growth in the SR 70/149/99 corridor would be based mostly on zoning, economic recovery of the region, housing demand (predominantly from the Sacramento market), and policies of local governments. While some growth will likely occur in the area, it is not anticipated to be substantial. The SR 70 Sacramento to Chico Corridor improvements would assist the local governments in accommodating already planned future growth.

3.17 Short-Term Uses of the Human Environment and Long-Term Productivity

Construction of the proposed project would result in short-term environmental impacts that could include:

- Removal of wetlands
- Removal of special status plant and wildlife habitat
- Removal of vegetation
- Changes in the visual environment

However, the proposed project would result in increased operating efficiency of the of the SR 70/149/99 transportation corridor by:

- decreasing congestion,
- improving safety,
- providing an inter-regional transportation facility

This translates into increased long-term productivity of the transportation system on a local level and for the region and state as a whole, with improved movement of goods, services and people. Preservation of wetland and special status species habitat

(included in project mitigation) would also contribute to the long-term productivity of the region.

3.18 Irreversible and Irretrievable Commitment of Resources

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. Land used in the construction of the proposed facility is considered an irreversible commitment during the time period that the land is used for a highway facility. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion would ever be necessary or desirable.

Considerable amounts of fossil fuels, labor, and highway construction materials such as cement, aggregate, and bituminous material are expended. Additionally, large amounts of labor and natural resources are used in the fabrication and preparation of construction materials. These materials are generally not retrievable. However, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. Any construction would also require a substantial one-time expenditure of both state and federal funds, which are not retrievable.

The commitment of these resources is based on the concept that residents in the immediate area, state, and region would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in time, and greater availability of quality services, which are anticipated to outweigh the commitment of these resources.